

# *Art & Design*

King Arthur's Gold - Behind the Scenes

This book is a chronicle of KAG's development. You are about to see never before published sketches, graphics, drafts, prototypes and just random things made by MM and Geti, the creators of KAG - when designing, coding and collaborating online to make the best multiplayer game ever made.

It is also a chronicle of how much it takes, how much effort, different designs, tests and failures there are until the final best result is achieved.

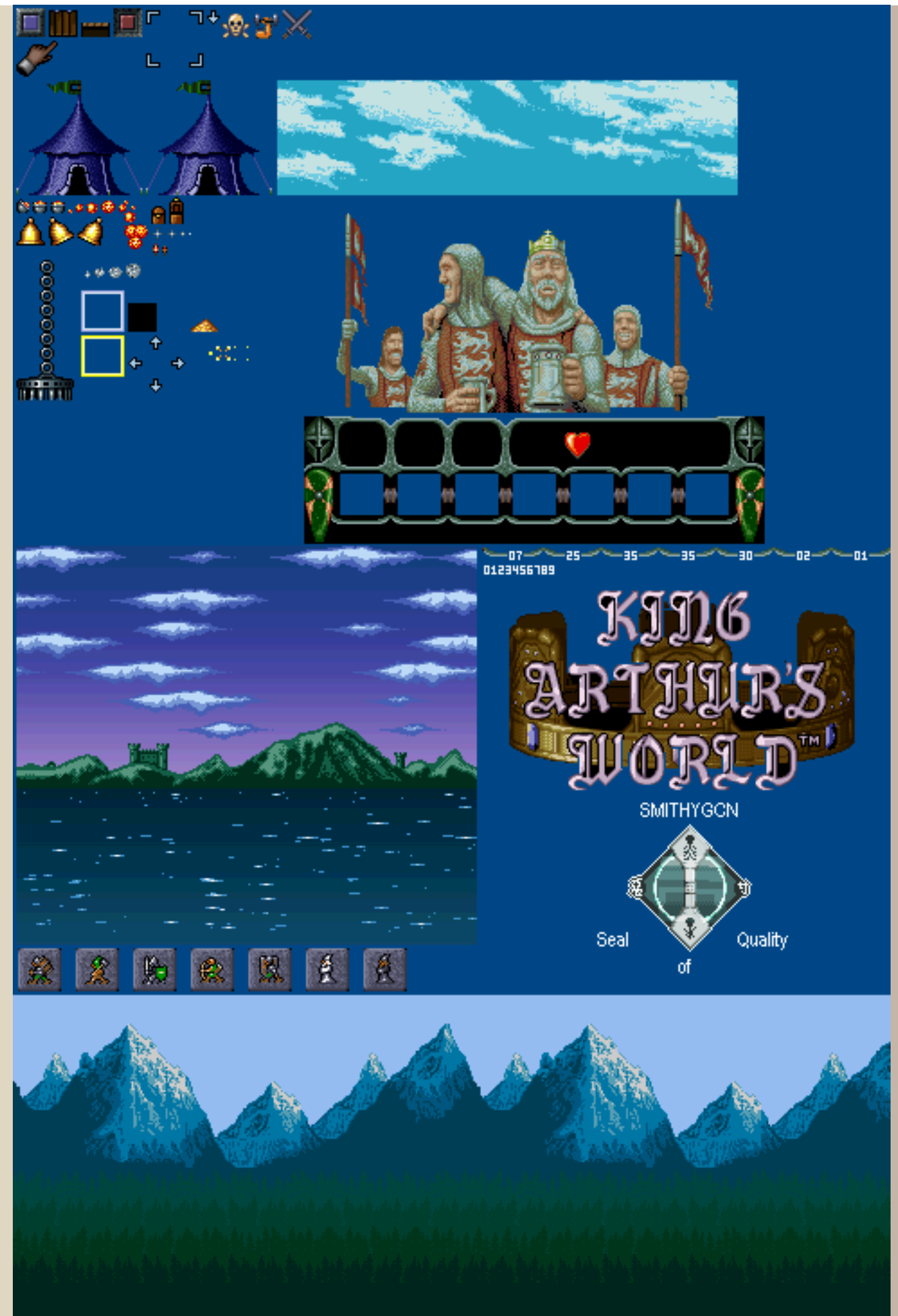
While reading, for fun, try to find which ideas stayed in the final game and which ones never made it.



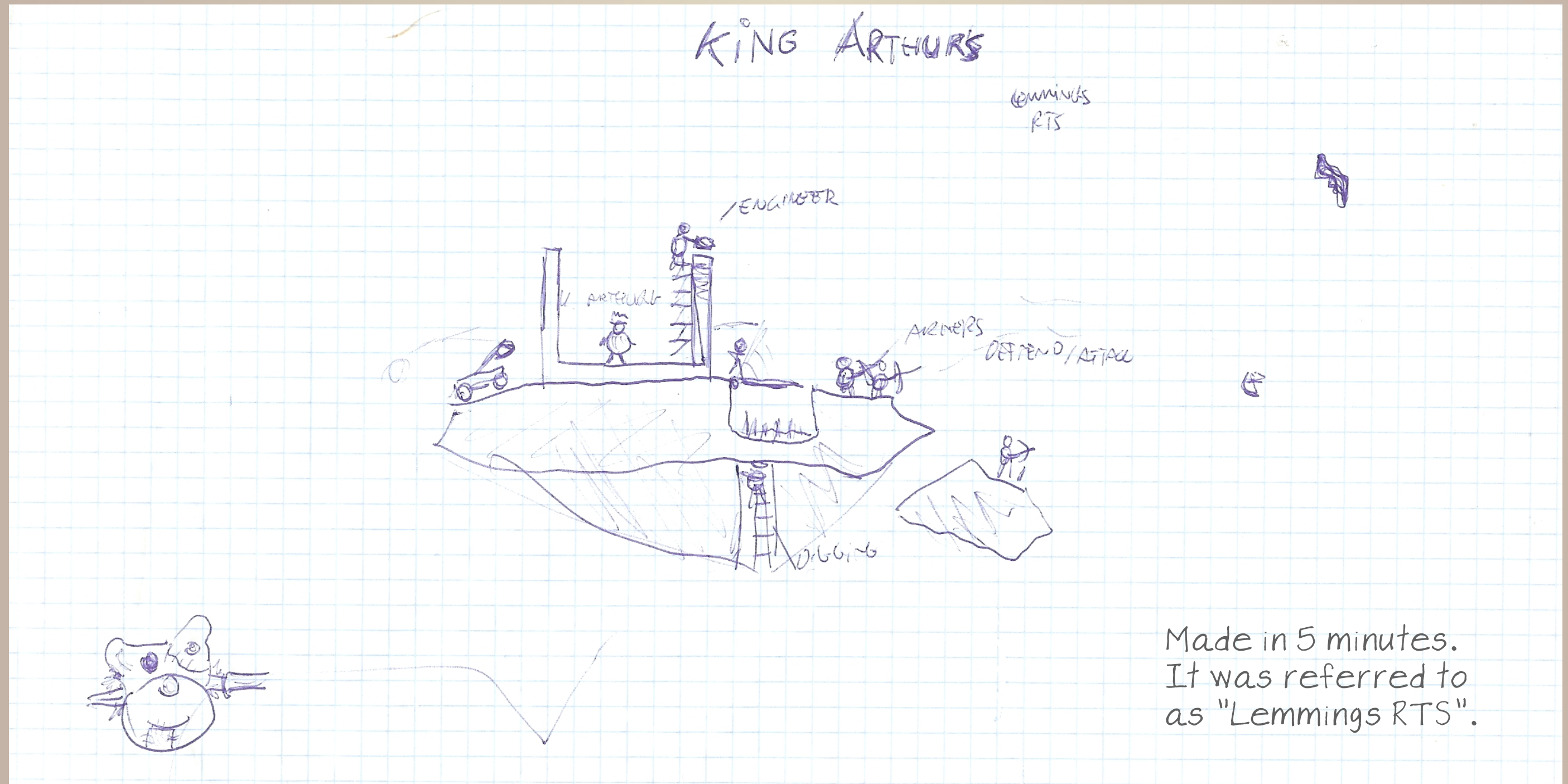
Geti                  MM  
San Francisco 2013

# It all began with a SNES game

King Arthur's World  
Developed by Argonaut Games for  
Super NES



# The original sketch by MM



Made in 5 minutes.  
It was referred to  
as "Lemmings RTS".



Fortunately Geti became the graphic artist...



## The very first mockup

These knight sprites were the first things Geti sent to MM after he was hired. MM considered firing him because he thought he could only draw Samurai knights...



## Second mockup with tree

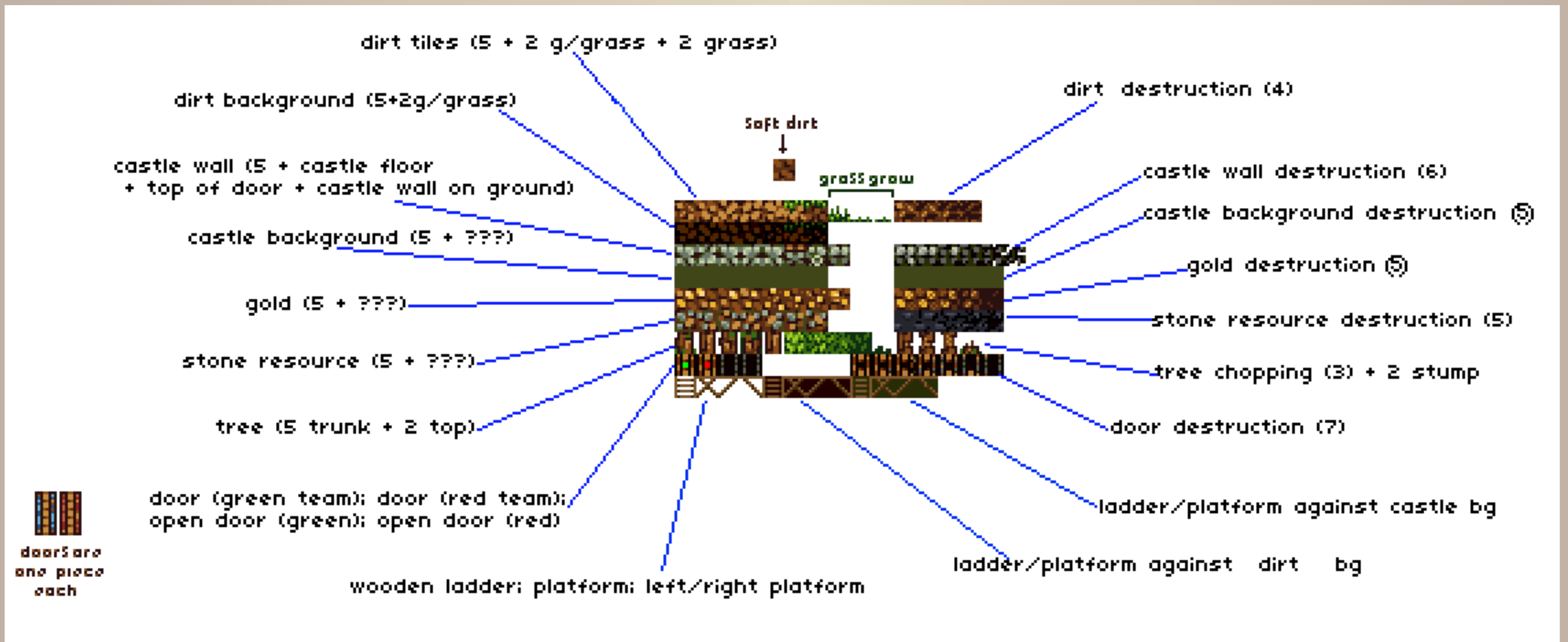
... and sumo knights...

# THE ALPHA VERSION

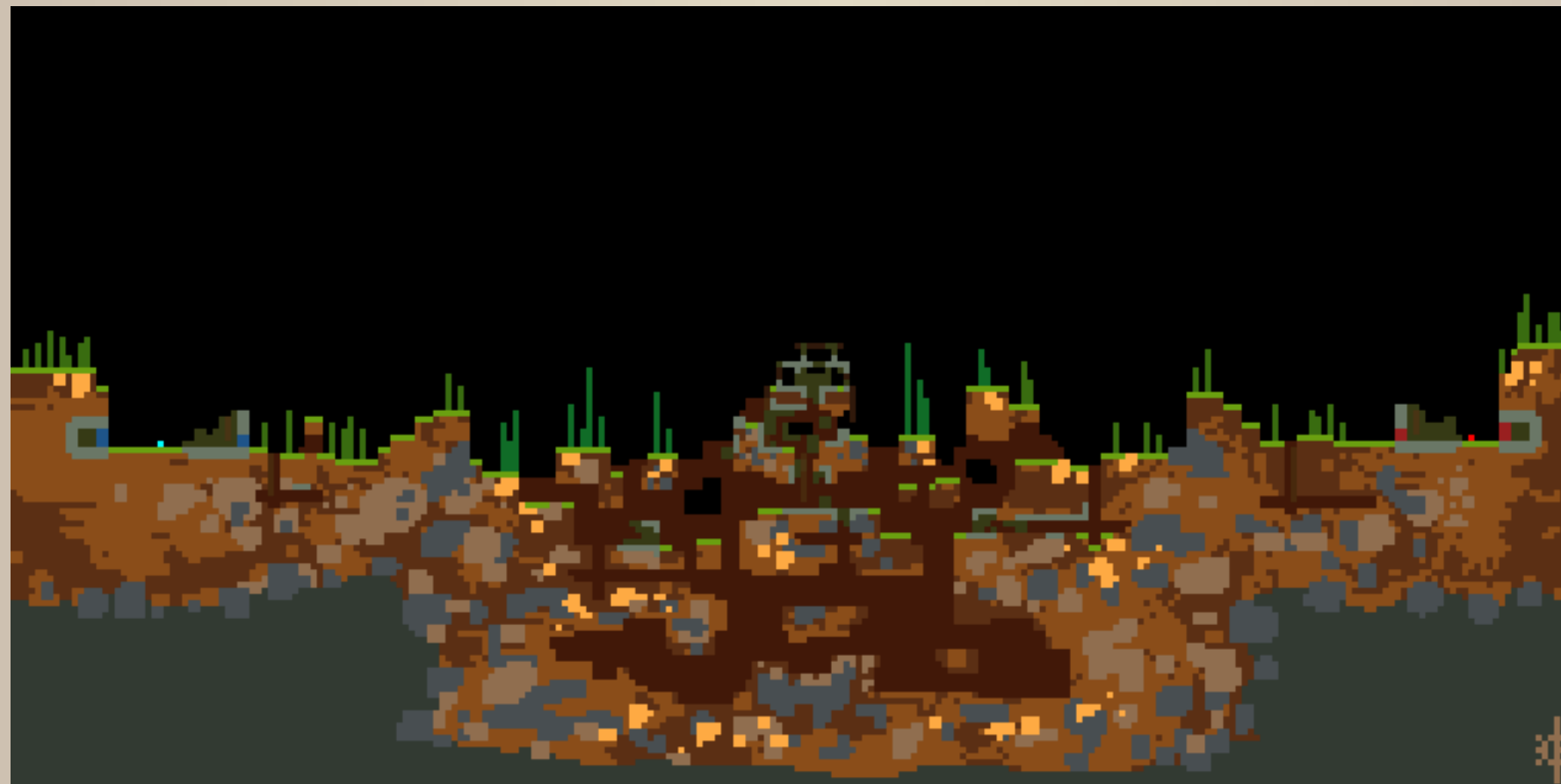


This mockup eventually became what is known as the alpha version (now classic).

# The tileset



# The PNG “map format”



CASTLE  
BACKGROUND

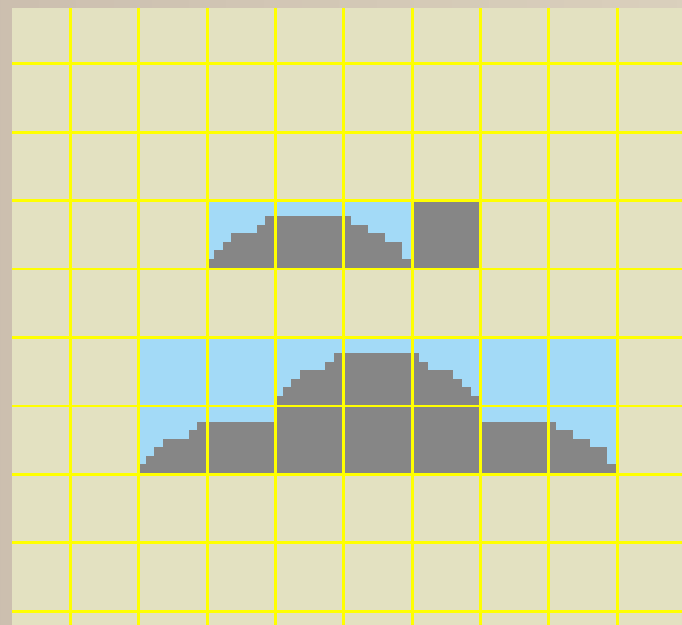
\* LADDER  
LADDER ON DIRT  
LADDER ON CSL

HARD DIRT  
SOFT DIRT  
GRASS  
PLAIN TREE  
PIA TREE

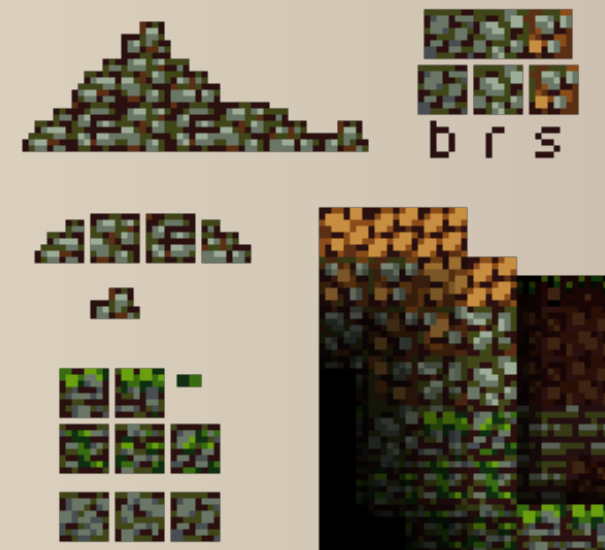
STONY  
STONE  
BEDROCK  
BE DIRT.  
GOLD



# Auto-tiling

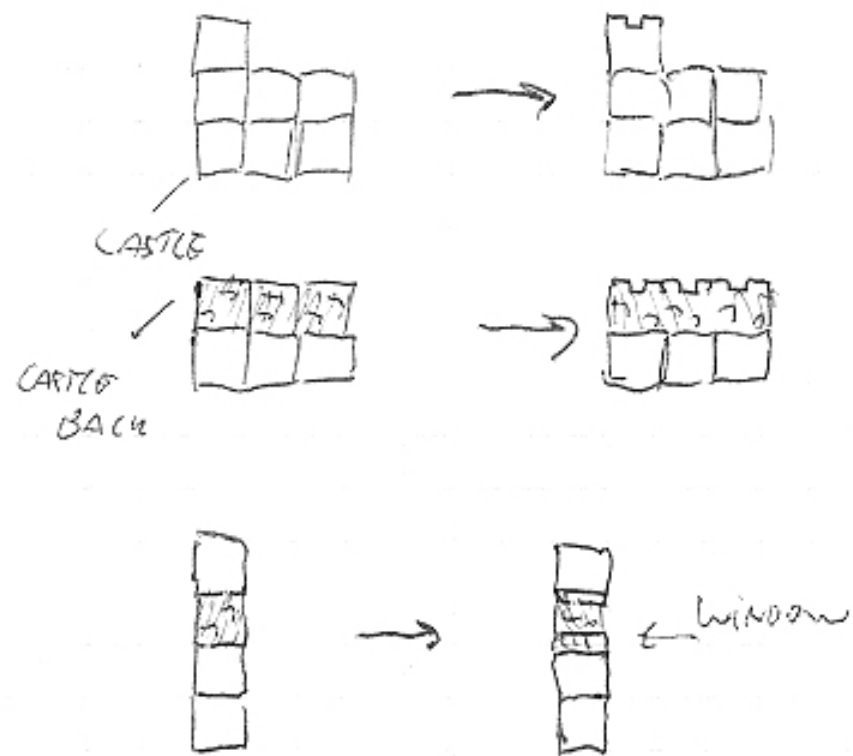


Concept

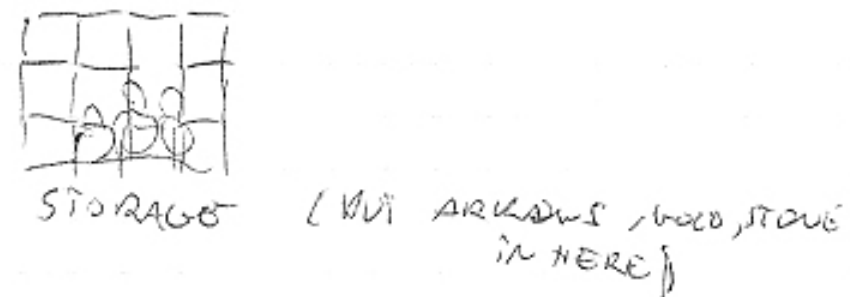
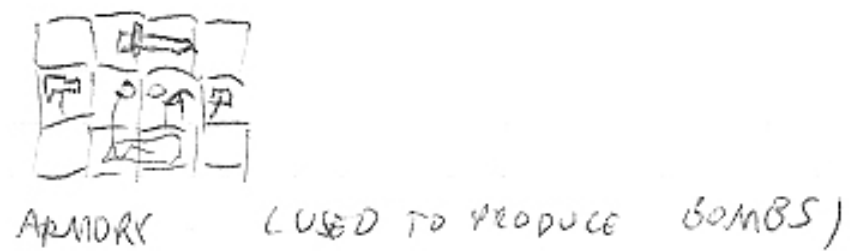


Realisation

## AUTO-ORNAMENTATIONS



## ROOMS





Explanation!

- - this
- - any tile

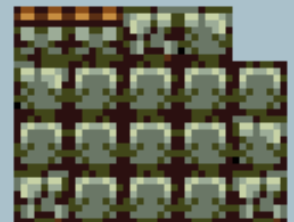


Explanation!

- - this
- - castle fg
- - castle bg



2x prevents floor in window



## THOUGHTS ON PLANTS.

### TYPES:



#### GRASS

- can be cut back.
- hides players
- could rustle as players go past.

#### CAVE PLANTS

- can be smashed
- could rustle as players go past.

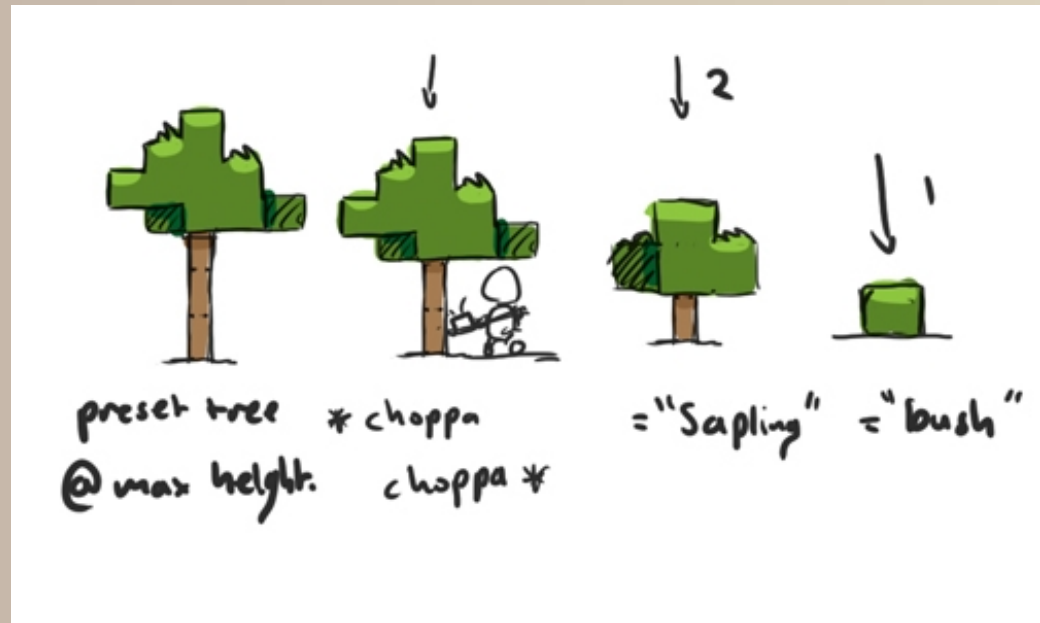
#### TREES

- cut down
- > 5-10 bits of wood
- FG LEAVES work like ladders.

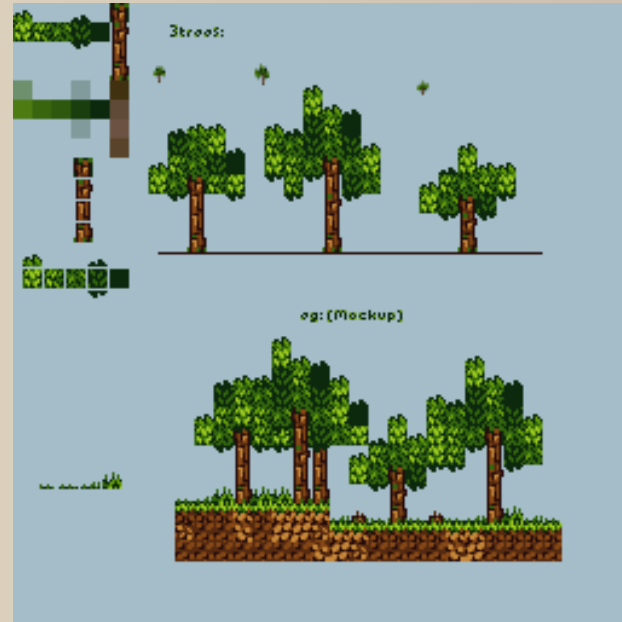
#### CROPS

- grown from seeds.
- make food, E to harvest when grown.

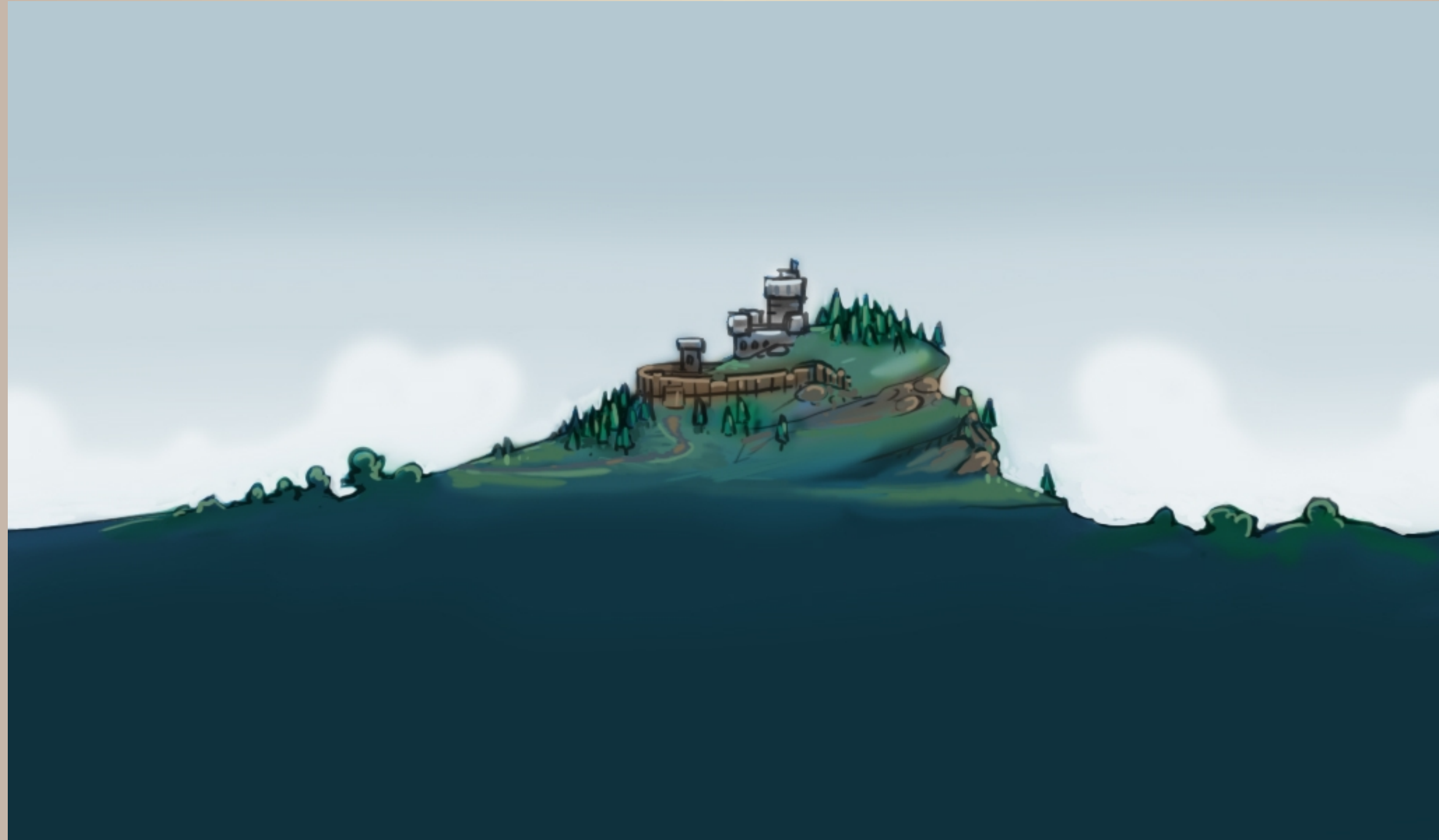




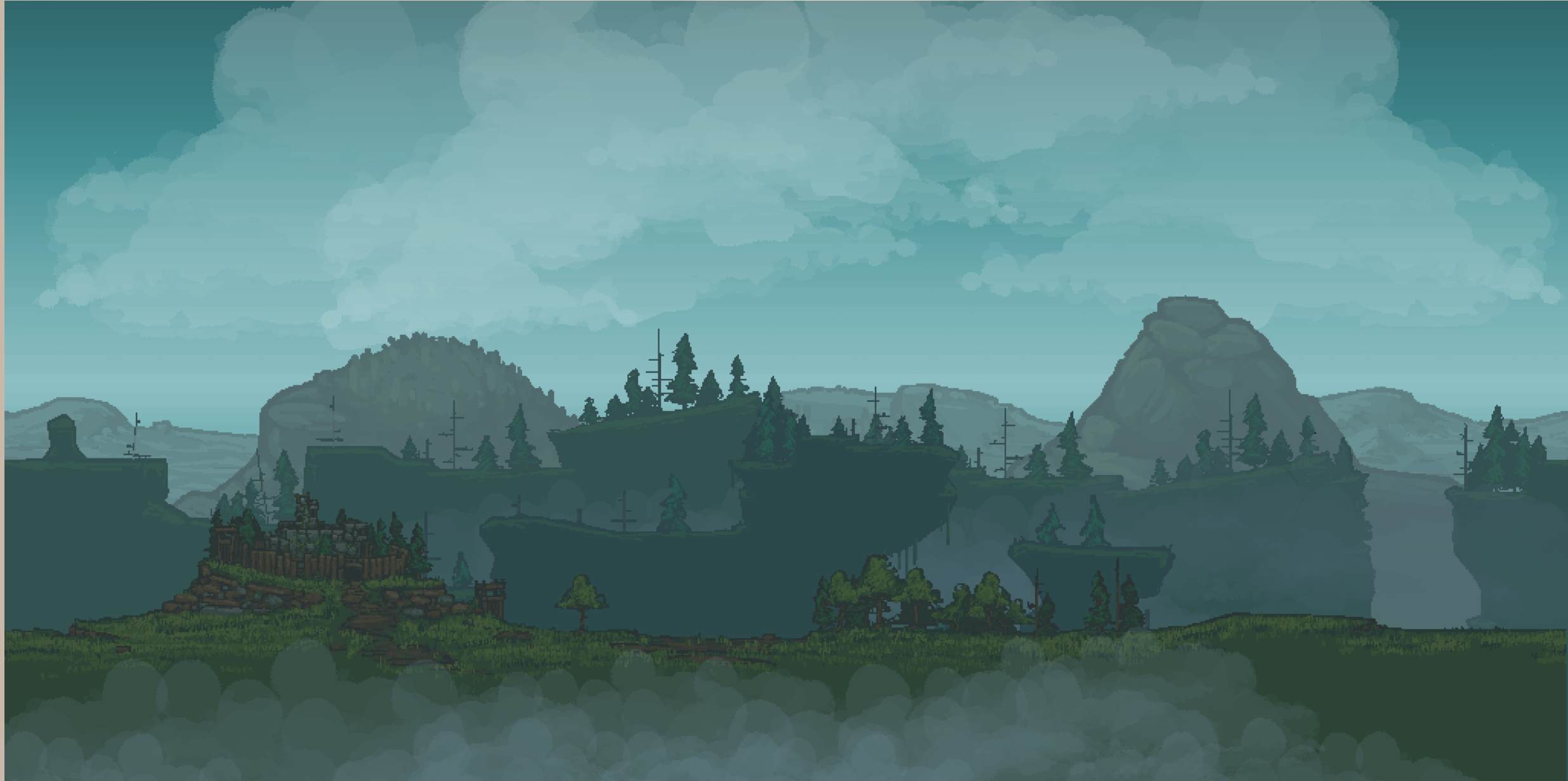
## Concept



## Realisation

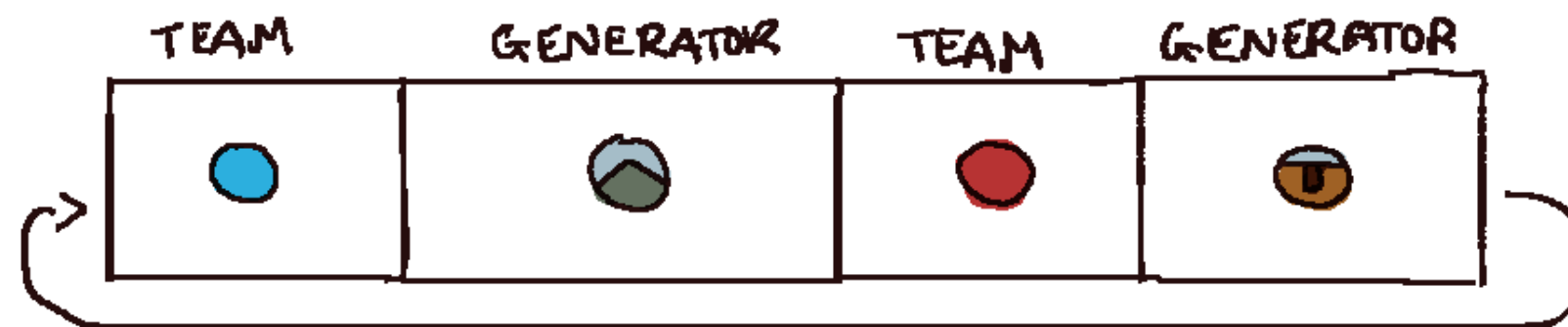


First background draft



The final background layers

Map  
generator  
idea



### Generator

Takes up to 2 edge heights (for seaming) and a list of rulesets + arguments to pass. Randomly selects one of the rulesets and uses that to generate terrain.

### Ruleset

Defined by a .cfg or similar, essentially determines how a patch of terrain will turn out. Accepts arguments like `minimum_feature_size` and `team_of_objects` if it's a team-location ruleset. Can call functions like

```
createMountain(x%, width, height, minimum_feature_size);  
createPlateau(x%, width, height, minimum_feature_size);
```

using variables passed to it (like `minimum_feature_size`) and is independent of the surrounding terrain except for the edge heights.

Has a name like "Rocky Mountains" or "Marshes" or "Plains".

### Team location

Where a team will spawn. Extends generator and accepts a team number to the constructor and is only allowed team-location rulesets (ie a set of rules that can place a spawn)

BONUS: there could be a "vote" flag for a team generator, where before the game starts each team gets to choose what sort of starting terrain they want.

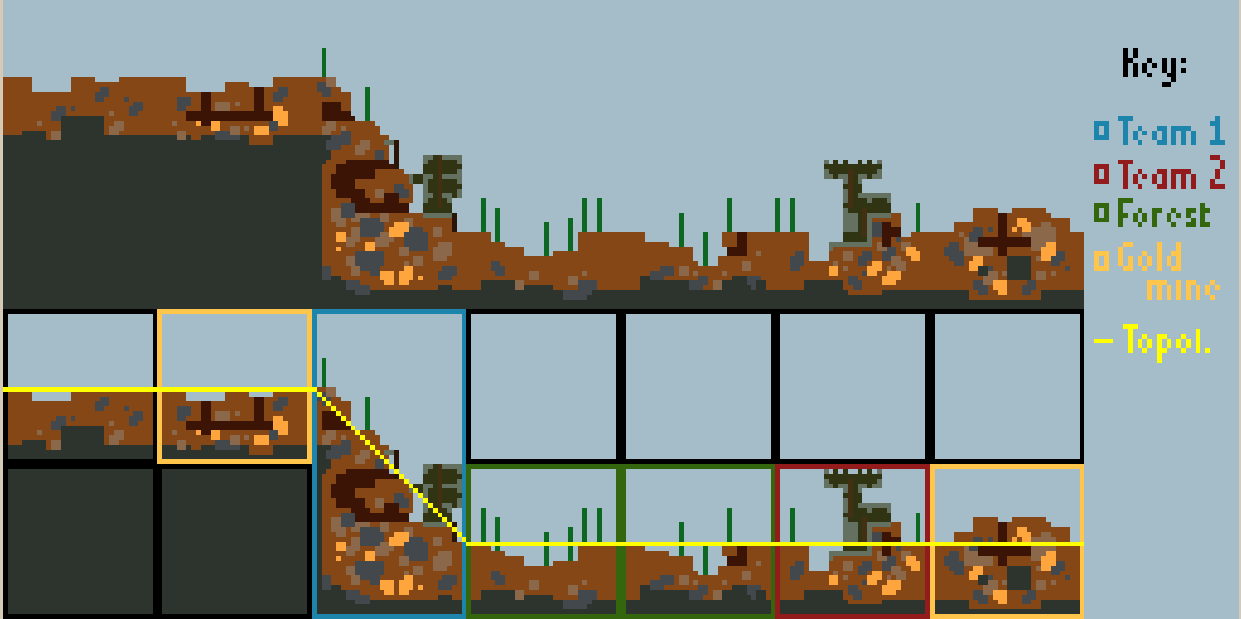
### Level

A predefined layout of generators, loaded by the level creator before a round starts.

### LEVEL CODE EXAMPLE:

```
width = $width; // input parameters  
height = $height;  
midline = 0.5 // ~50% sky  
// AddGenerator arguments: {list of ruleset Names}, weight  
// The width of each generator is determined by (sum_of_weights/weight) * width  
AddGenerator({"Plains", "GrassyPlains", "Woodland"}, 2);  
AddTeamGenerator(0, {"TeamMountain"}, 1);  
AddGenerator({"Mountain", "RockyMountain", "Mines"}, 2);  
AddTeamGenerator(1, {"TeamValley"}, 1);  
// NOTE HOW EASY THIS MAKES DEFINING LEVELS IF YOU ALREADY HAVE RULESETS.
```





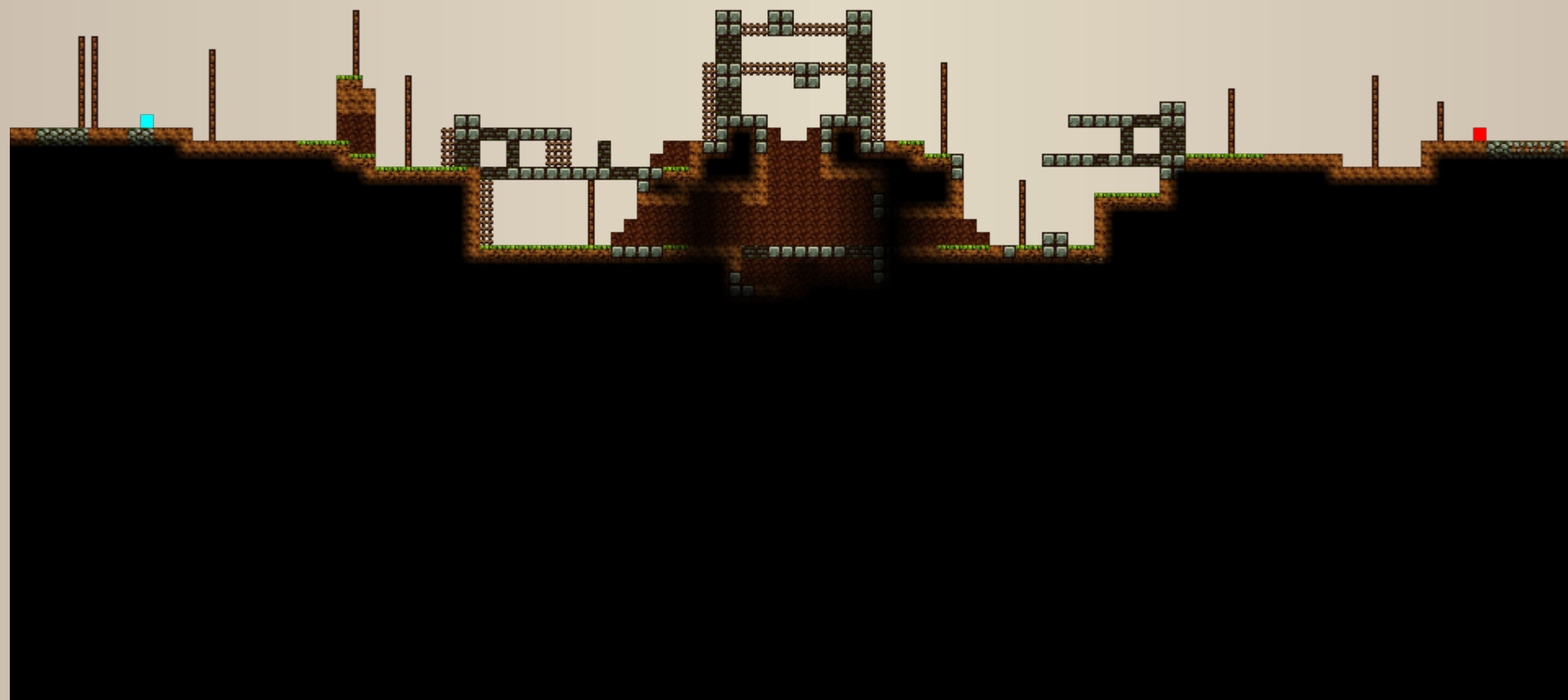


Wooden blocks were a very early idea but were implemented much later.

# Lighting



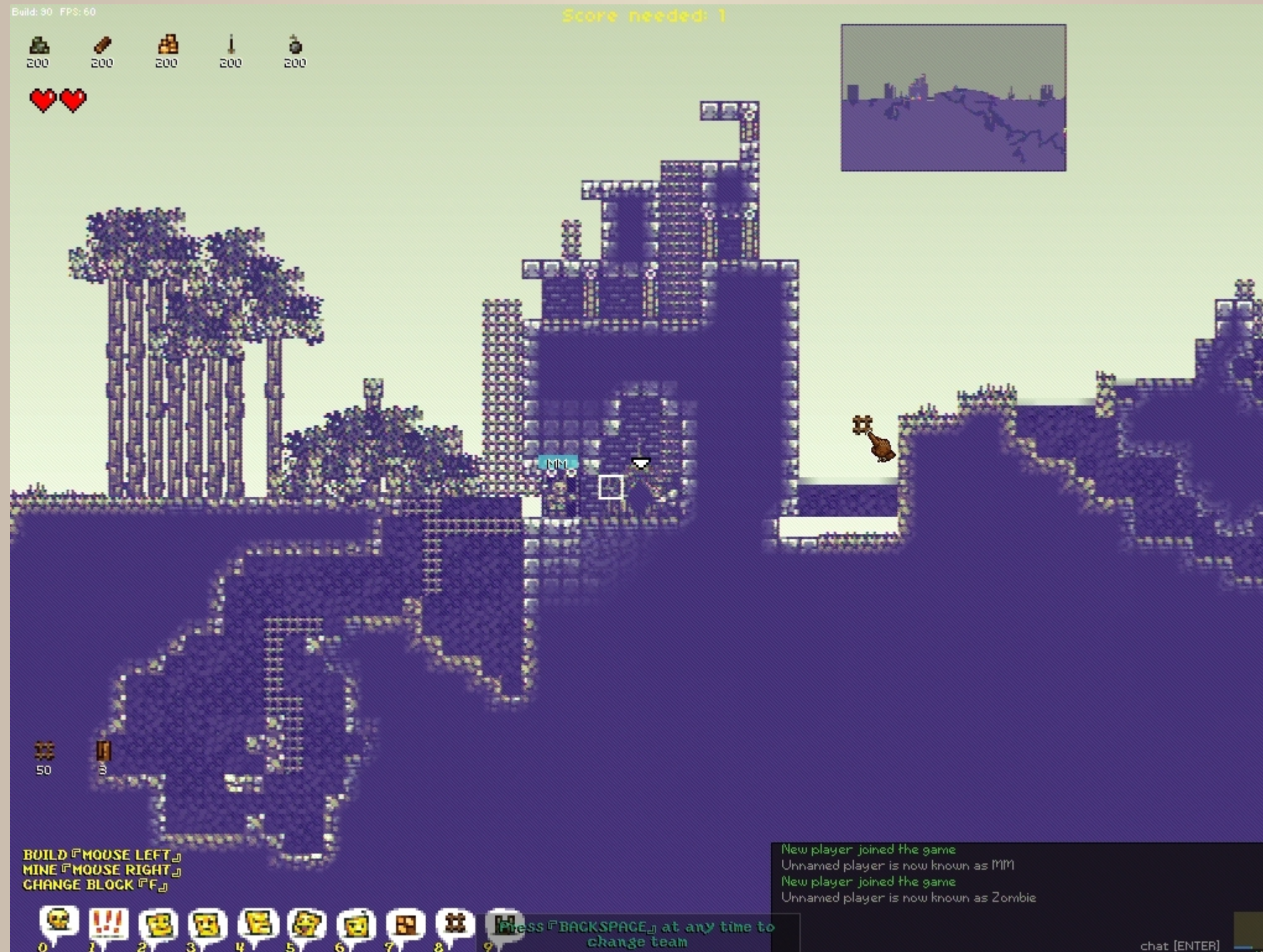
Easy lighting mockup



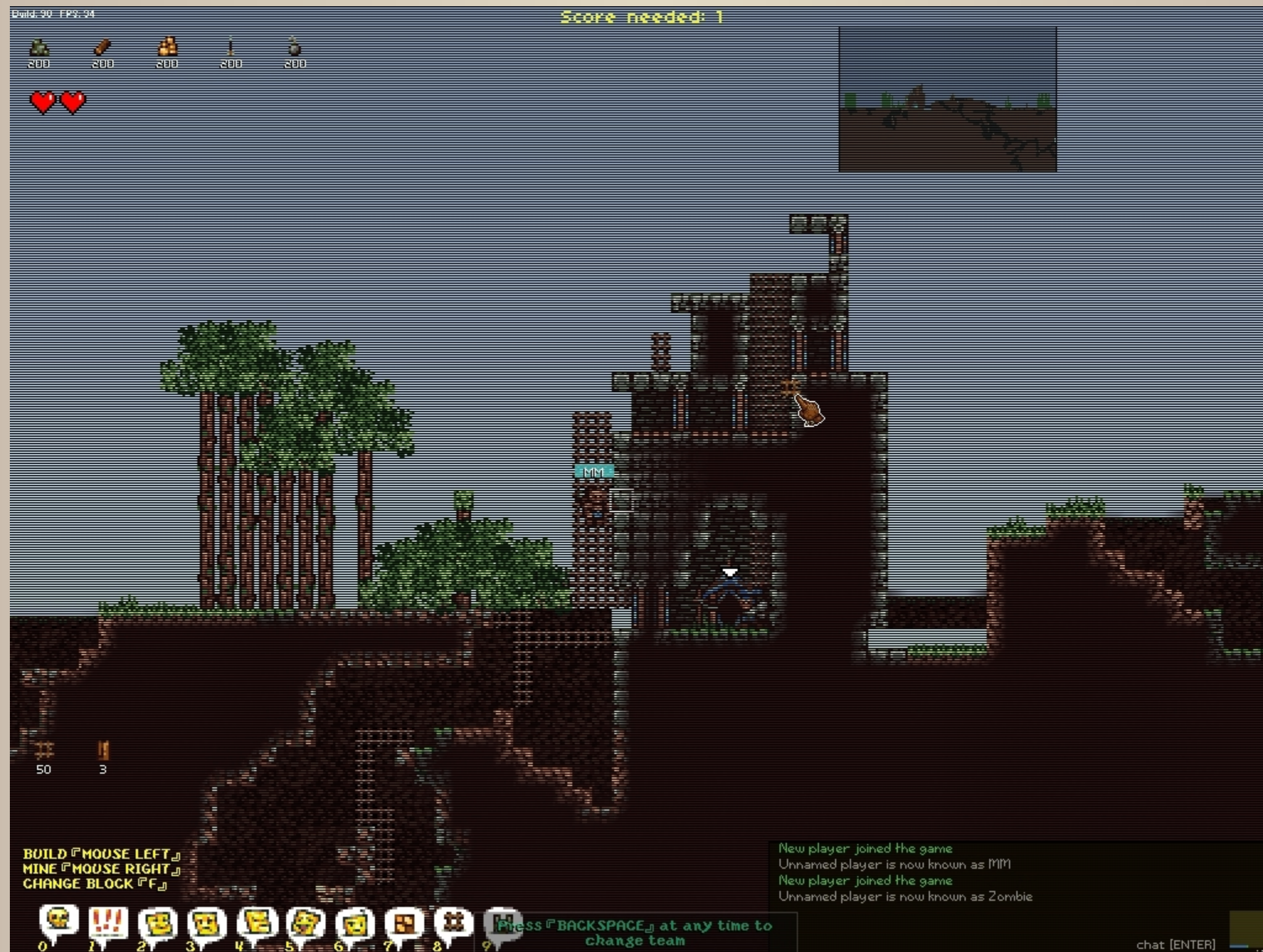
First test of "radiosity" lighting



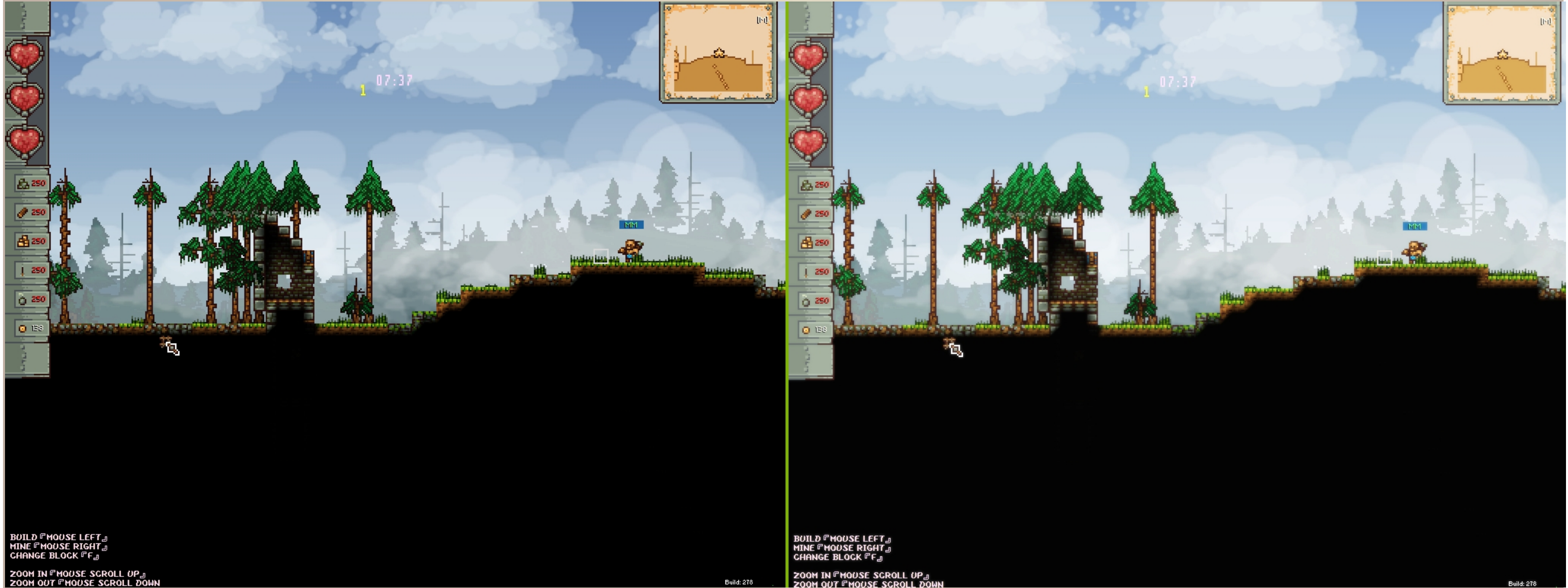
# Shaders







The SNES mode

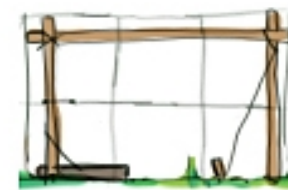


"Day" shader

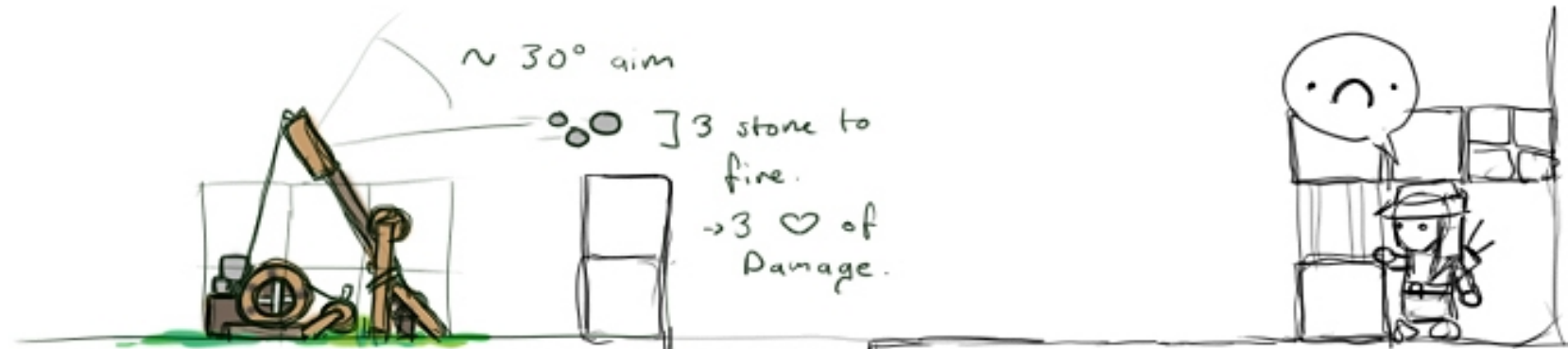


# Constructions

Initial "build zone":



Almost done.



~ 30° aim

3 stone to fire.  
→ 3 ♥ of Damage.

QUICK - PULT

3x2, cheap,  
weak.

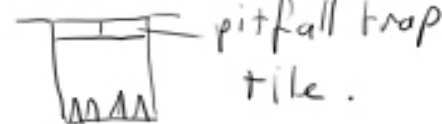
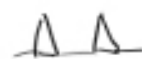
5x ♥ HP

50 wood, 30 stone.

Initial fortification  
to hold point.

Build  
over time  
- many  
builders  
can help?  
→ faster?

tile type idea - Spikes.



pitfall trap  
tile.

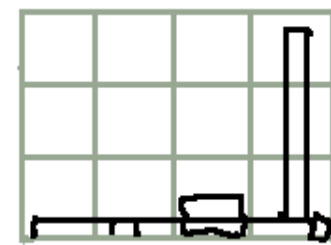
- need block below.  
- kill anyone making  
down over them.

Structs have no  
team → can be  
stolen/operated by  
enemy → don't point  
at friendly stuff.

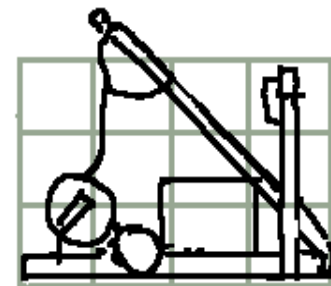
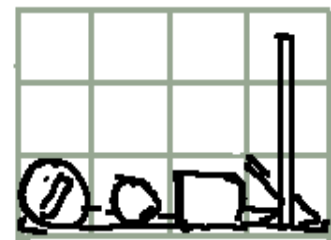


# BUILDING IMPLEMENTATION

## CONSTRUCTION



swap quads

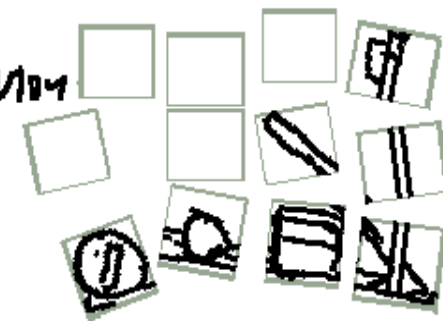


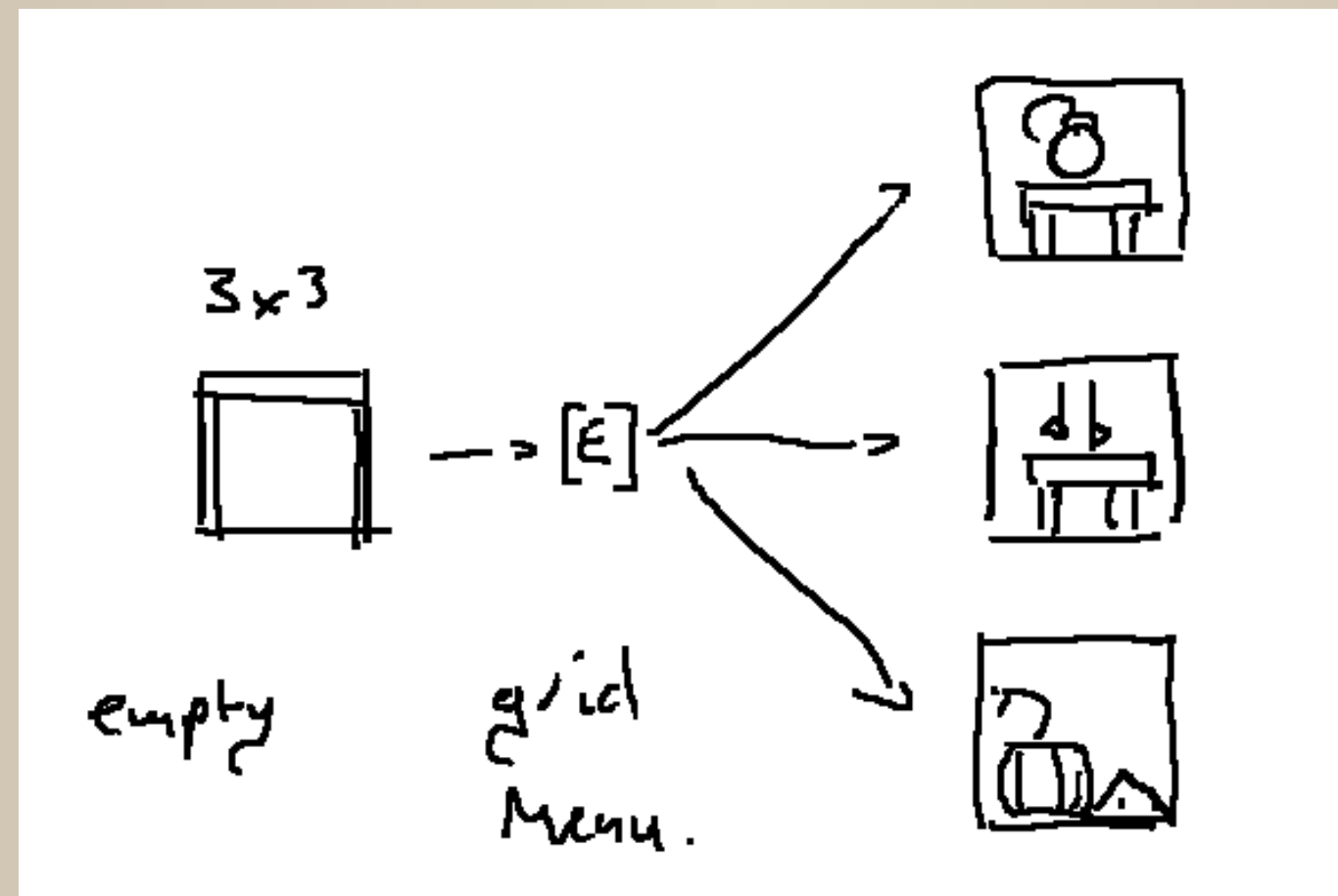
## DESTRUCTION

Smash  
the  
"Complete"



In -  
Construction  
Image.





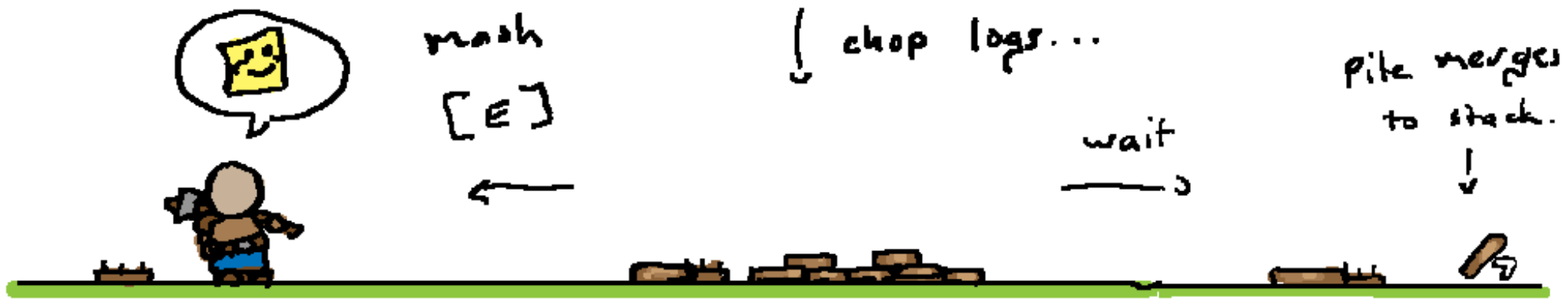
Workshops construction



TREE CHOPPING!



sticks = Rocks. but for wood.

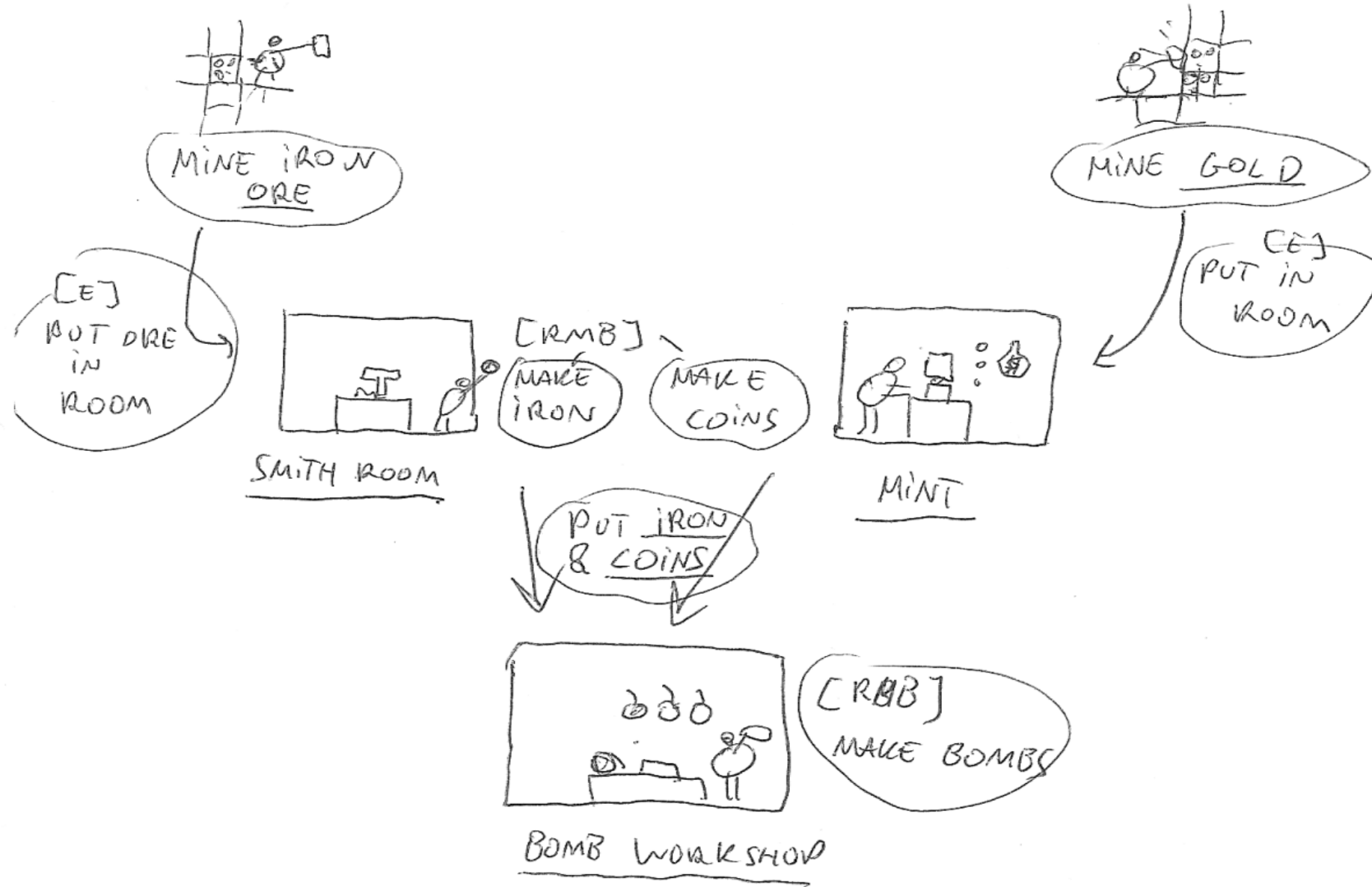


Stack of 80 wood

PILE OF "STICKS" (8 of them)

↑ lonely stick.

# BOMB WORKSHOP



UNIVERSAL ROOM INTERFACE:

[E] PUT RESOURCE

[RMB] MAKE ITEMS

TH  
MO  
SOT



1) A builder makes a construction scaffolding

Each builder should only be able to have 1 scaffolding active -> no spamming to create lag. there's no way you'd "need" more than 1 room "in construction" per person anyway.

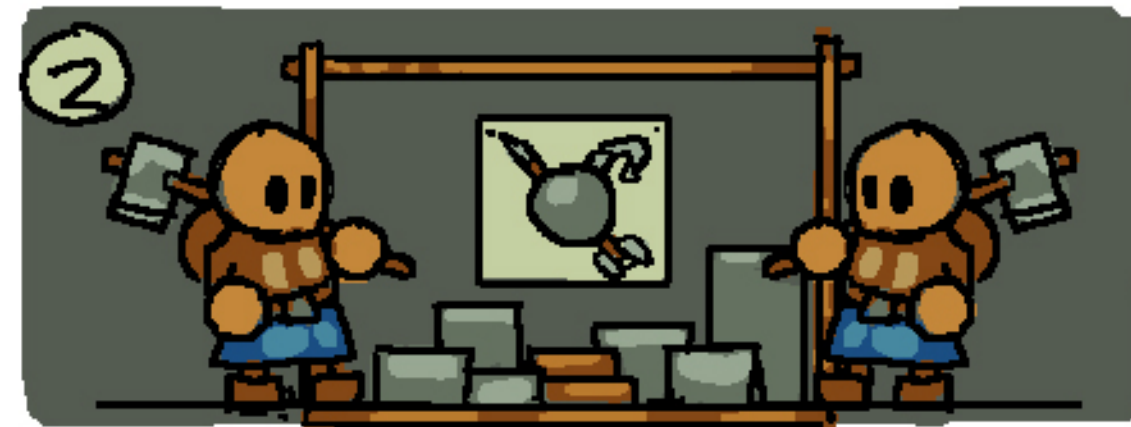
Each scaffolding would cost ~one fifth of the total cost of the room/building to set up, and should display an icon of what's going to be constructed (here, the armory)

2) Press the action button [E] to dump resources into the scaffolding area. Friends can help out. (simple ~5 frame animation indicating progress)

Buddies can help out!

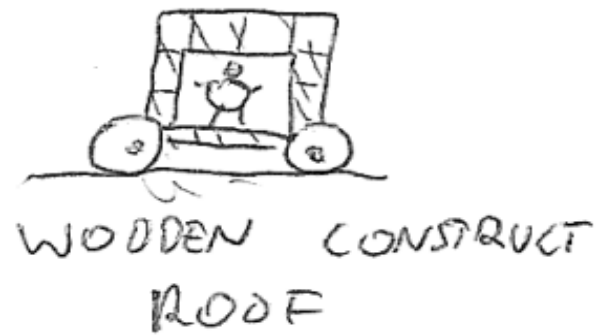
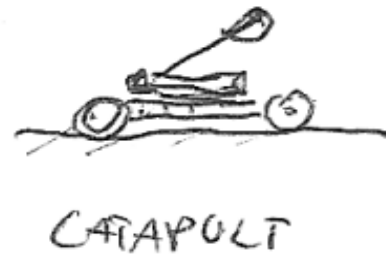
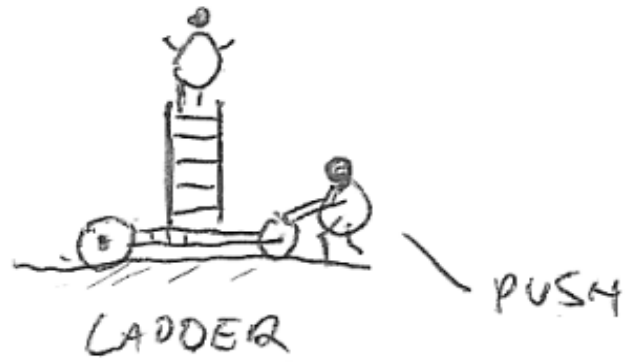
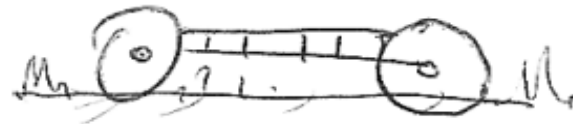
3) Hold the action button [E] to build! this should cause a hubbub, both visually and with clinkyclank foley. Lots of smoke. Buddies can help out here too!

4) The final, working room is complete.





# UNIVERSAL WHEELED PLATFORM



# Emoticons & customization

COMMUNICATION BUBBLES - 2 SETS.

SWAP w/ @ or ~

social

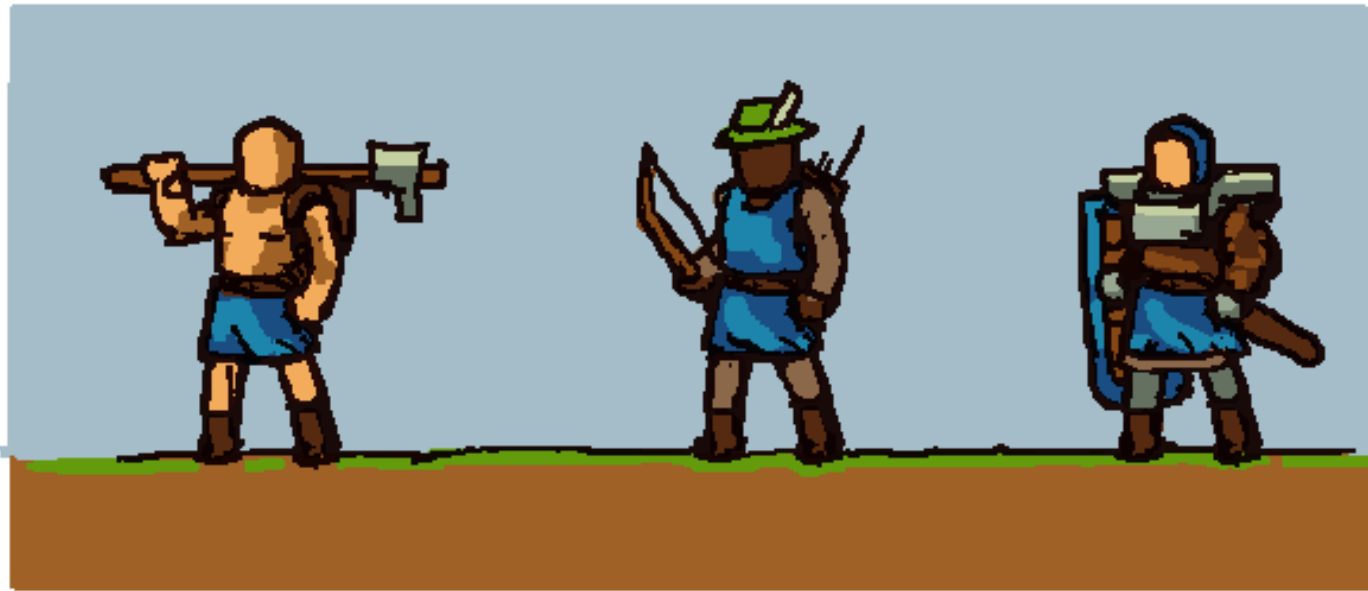


functional



global





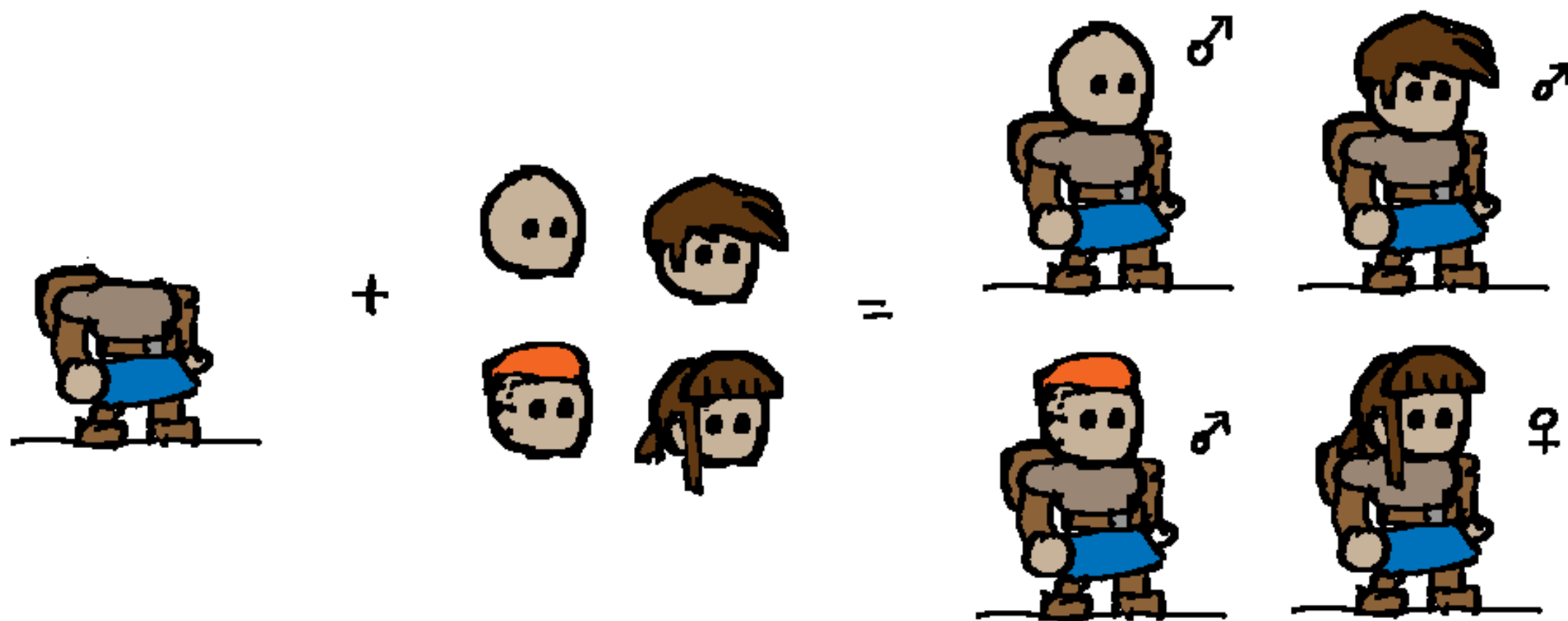
Enough customisation?

- Skin Colour
- Hair colour
- Gender

Hair isn't visible on a lot of the classes but if that really matters we can make hats/hoods/hairstyles an option too, potentially.



# PLAYER DIFFERENTIATION.



HEADS W/ DIFFERENT CLASSES.

"BASE"



KNIGHT



ARCHER



---

BLD BODY



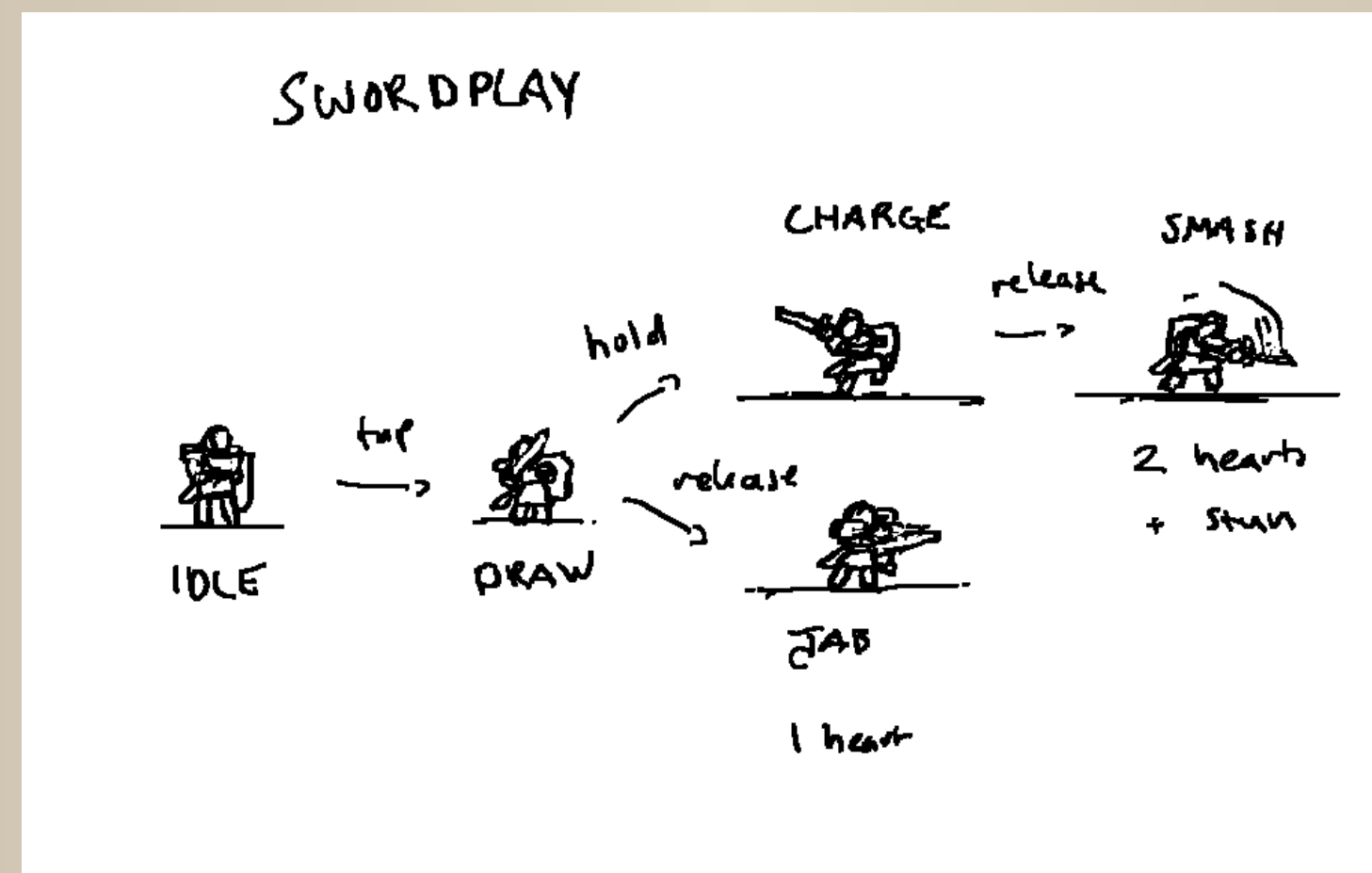
KNT BODY



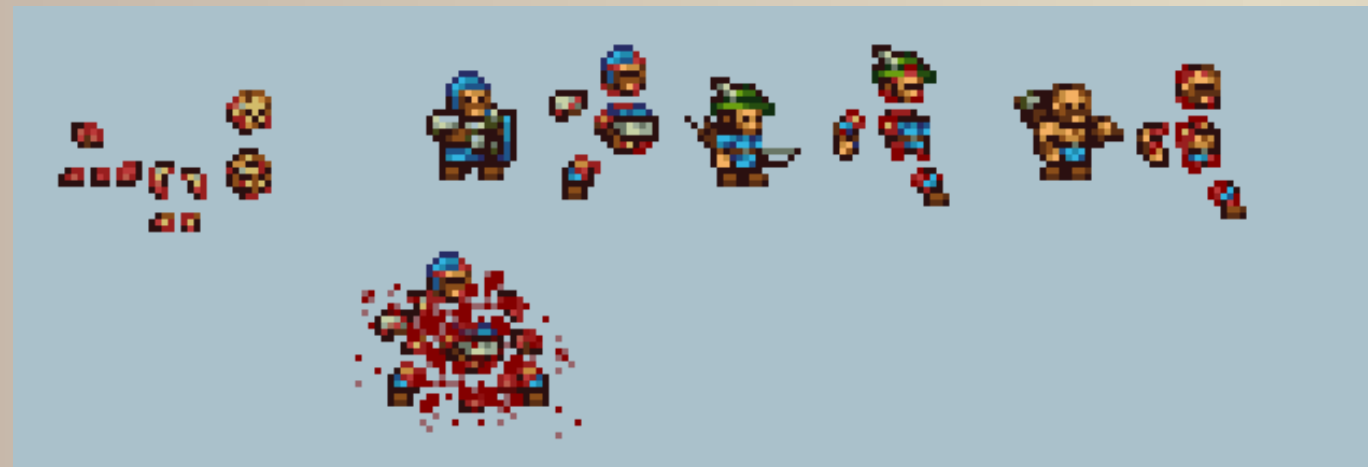
ACH BODY



# Knight combat



The initial combat in KAG was just jabbing and shielding. This needed to be improved.



## HITBOXES.



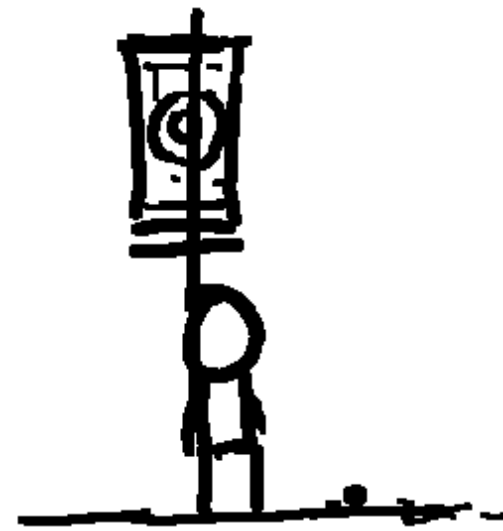
These stay around while  
moving -> attacks in  
motion -> fun :D



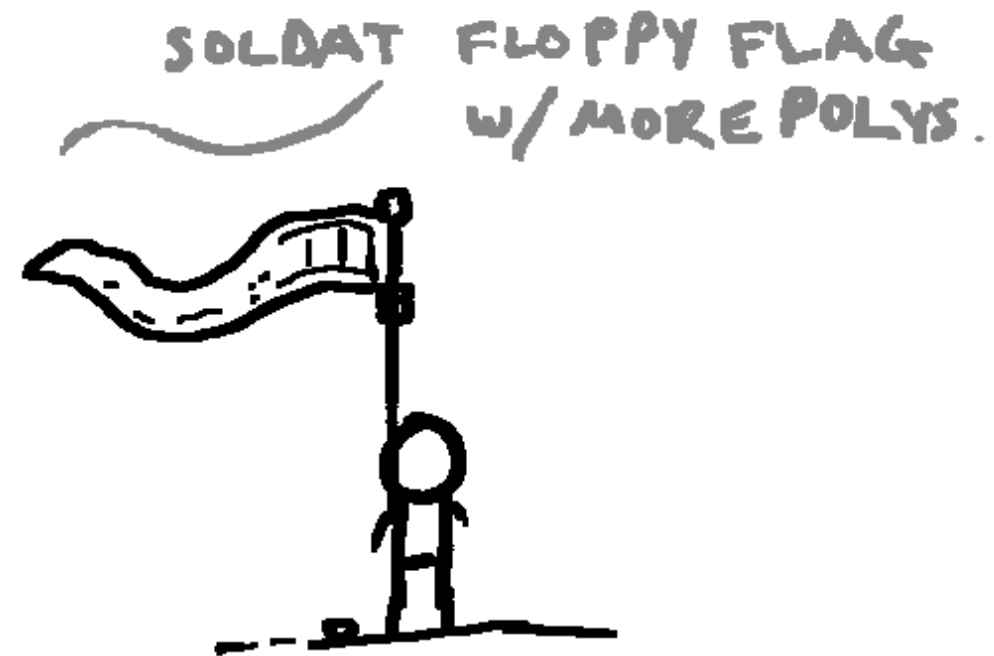
# Capture the Flag



The first game mode in KAG was "Goldhunt". However after seeing that it was flawed it was quickly decided to make a straight-forward game mode called "Capture the Flag"



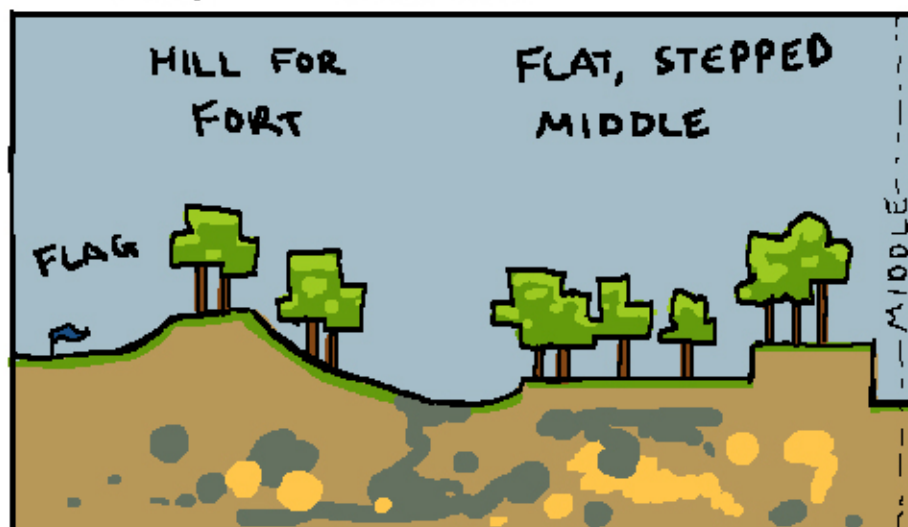
UPRIGHT  
"WAR BANNER"



FLOWING  
"EPIC BANNER"

# CTF GAME MODE

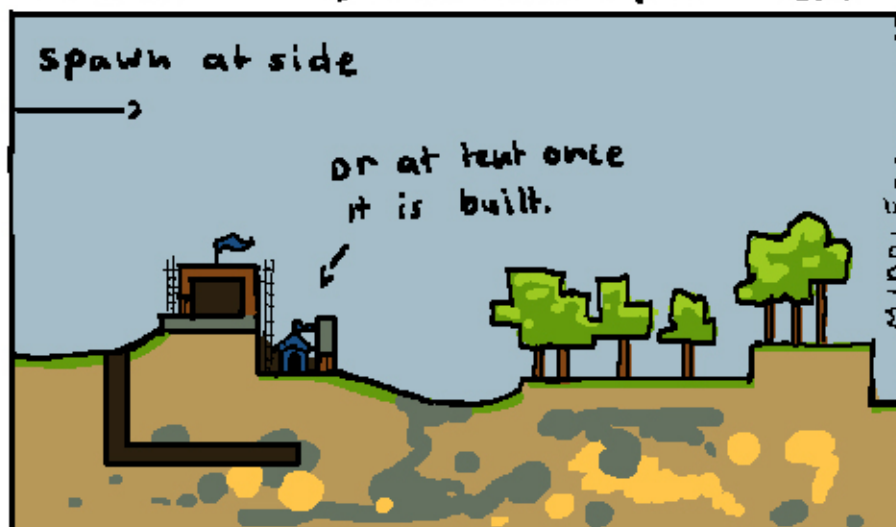
## MAP ARETYPE



### 3. CONVERT FORT TO STONE + ARMOURY + FORWARDS OUTPOST.



### 1-Clear land, Build initial fort + Tent



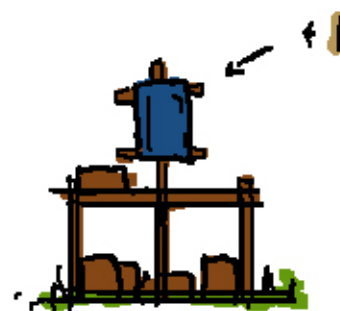
For gameplay to start strong, I think teams should start with a pile of resources beside their flag, like an "embarking" stockpile. That'll help castles get set up more quickly. Those resource "items" (hit E to pick up) could be on the map in forests and caves as well to make exploring more profitable.

note: creating spawn points also creates flags! see the values of each flag over there ->

this means creating new spawn points (especially ones near the enemy) presents a risk! outposts present a smaller risk -> more suitable for front line.

I think 2 or 3 types of flags is a good idea, the two going for a team's huge epic banner on top of their fort is worth more than killing some front line rickety outpost, but killing the outpost still furthers your team's objective so everyone is doing something useful.

If a team's epic banner gets stolen, another one spawns in its original location at the side of the map. smaller flags dont respawn.

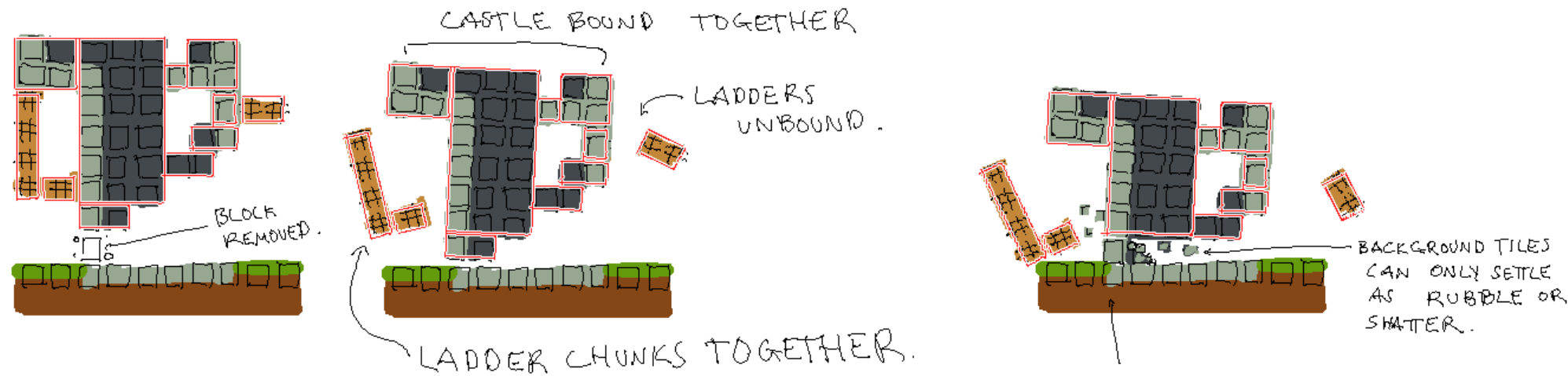


MASH [E] to pick up

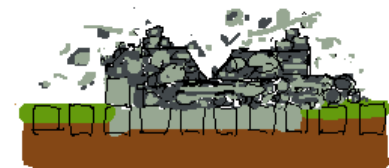
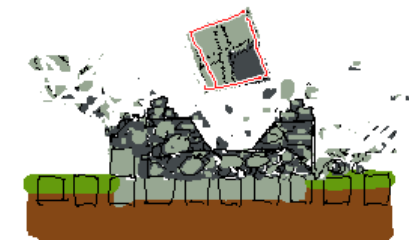
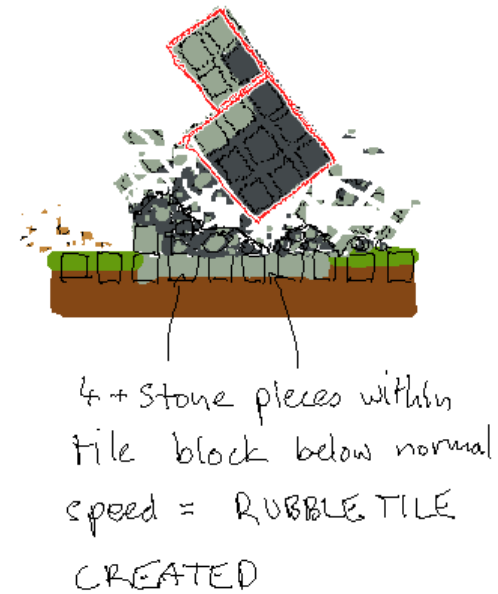
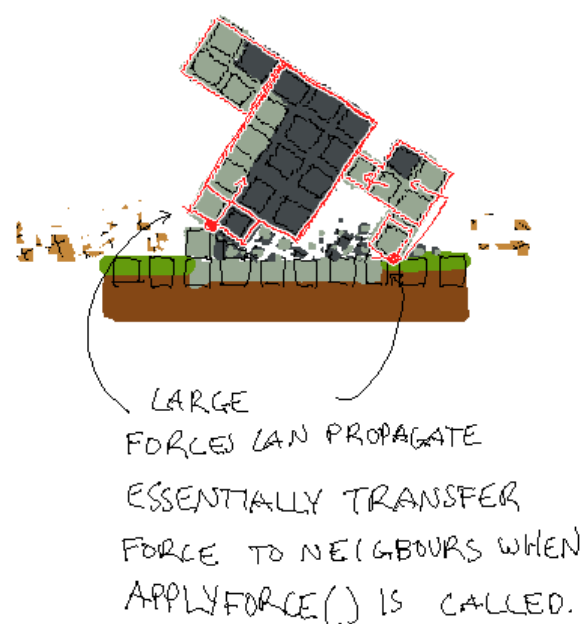
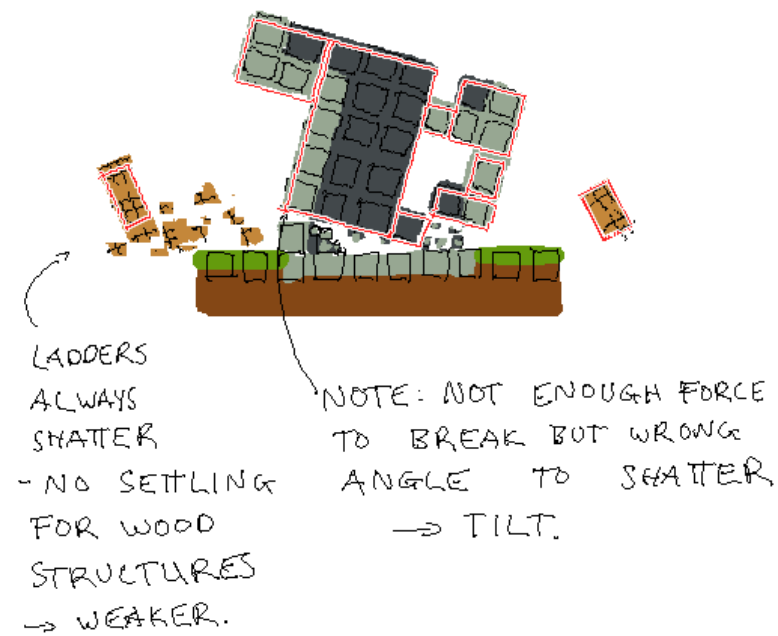


stone: 100  
wood: 200

# Collapses

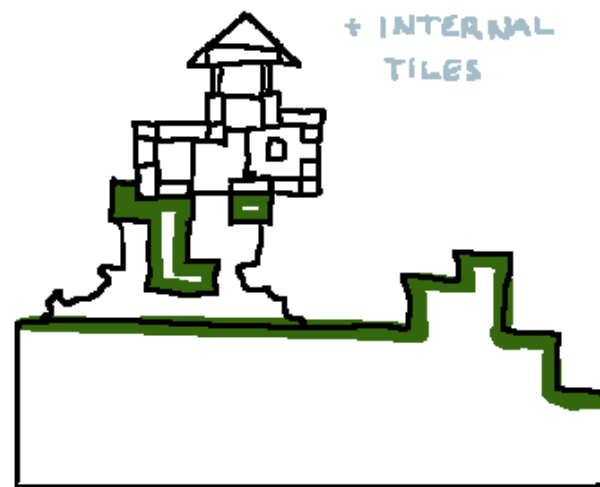


NOTE: SOME SECTIONS WILL SIMPLY SETTLE IF THERE'S NOT ENOUGH FORCE. DOING SO SHOULD ADD A BIT OF VELOCITY TO THE CHUNK TO ENCOURAGE SMASHING.

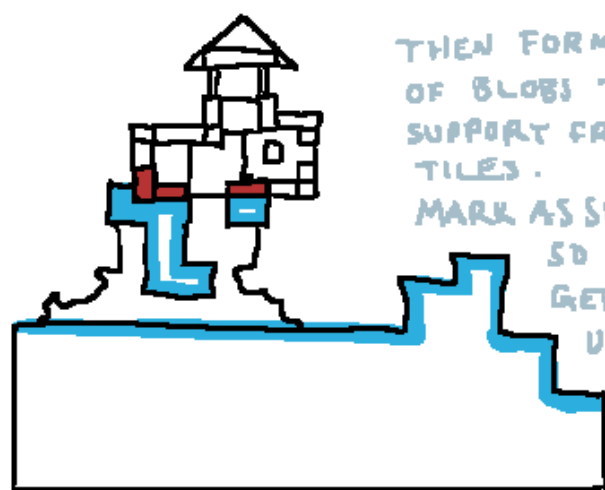




ITERATE OVER TILES: SKIP  
ALL BG + EMPTY TILES  
+ INTERNAL  
TILES



SET THESE TILES' SUPPORT TO 'TRUE'



THEN FORM A LIST  
OF BLOBS THAT NEED  
SUPPORT FROM THESE  
TILES.  
MARK AS SUPPORTED  
SO THEY ONLY  
GET PICKED  
UP ONCE

FOR EACH BLOB, DO A SIMILAR  
THING - GIVE SUPPORT, THEN



ADD ANY BLOBS  
THAT HAVE GAINED  
SUPPORT TO THE  
LIST OF BLOBS  
TO SUPPORT FROM.

ONCE THE LIST IS EMPTY

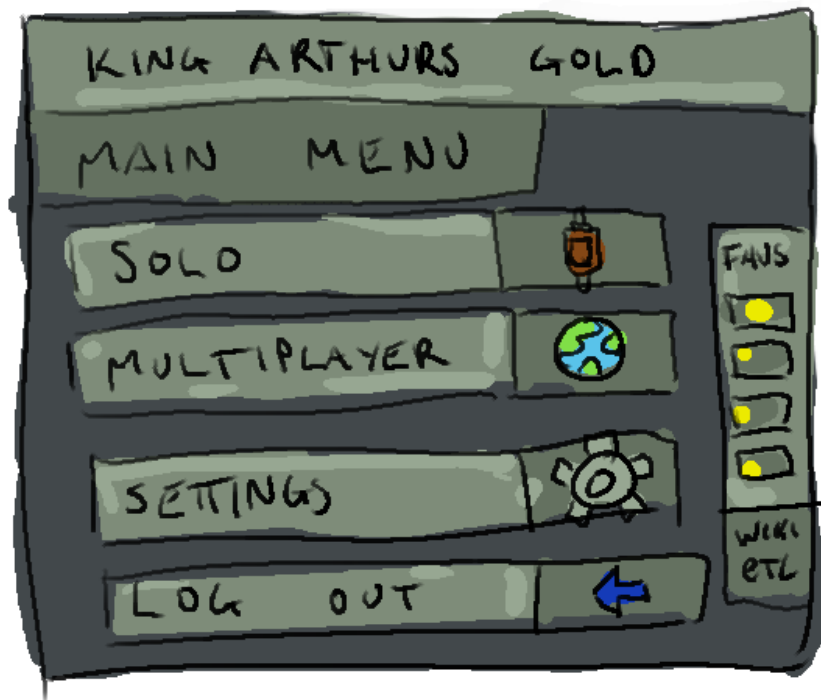
KILL ALL IN  
GETALLUNSUPPORTEDBLOBS()

# Interface



LOGIN AS IS.

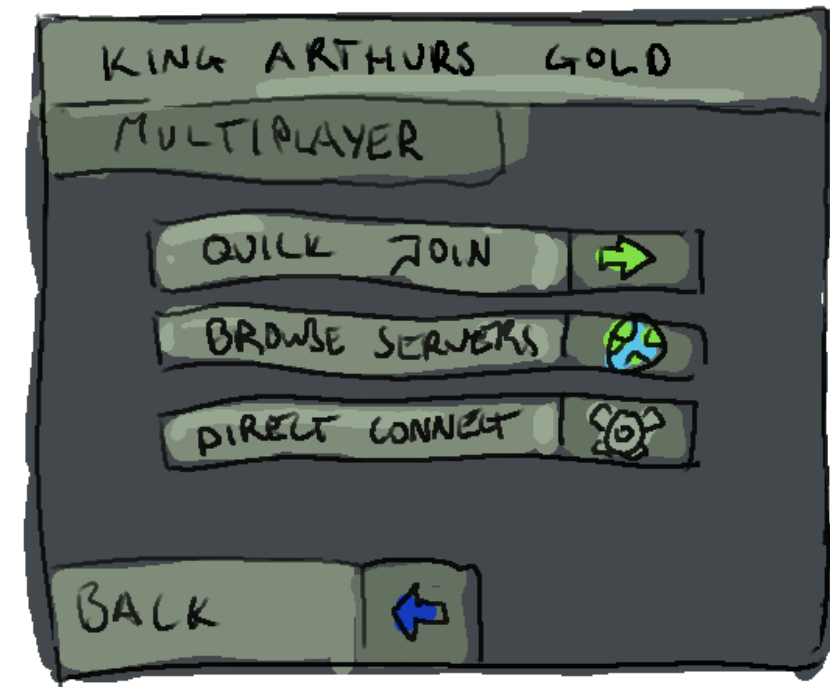
MAIN MENU.



SOLO



MP





← SERVERS JOIN

- GAMINGCREW ★
- OFFICIAL EURO ★
- SOME OTHER... ★
- JASON'S THING ★
- MORE DOWN HER... ★

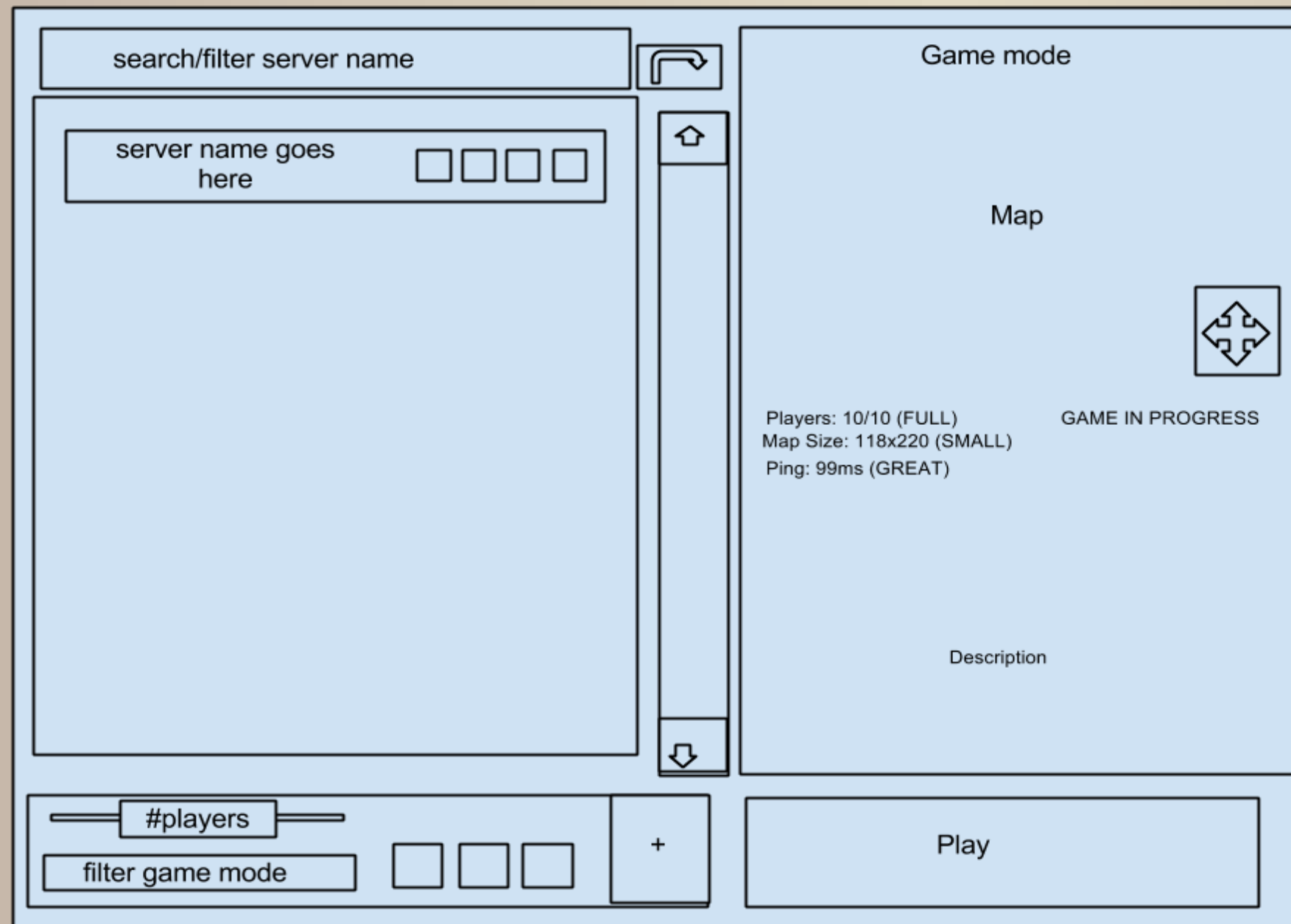
Blah blah info here... -

MODS |  |  |  |  |

0017/0032 PLAYERS  
CTF  
EUROPE 300 PING

# The many stages of the servers browser





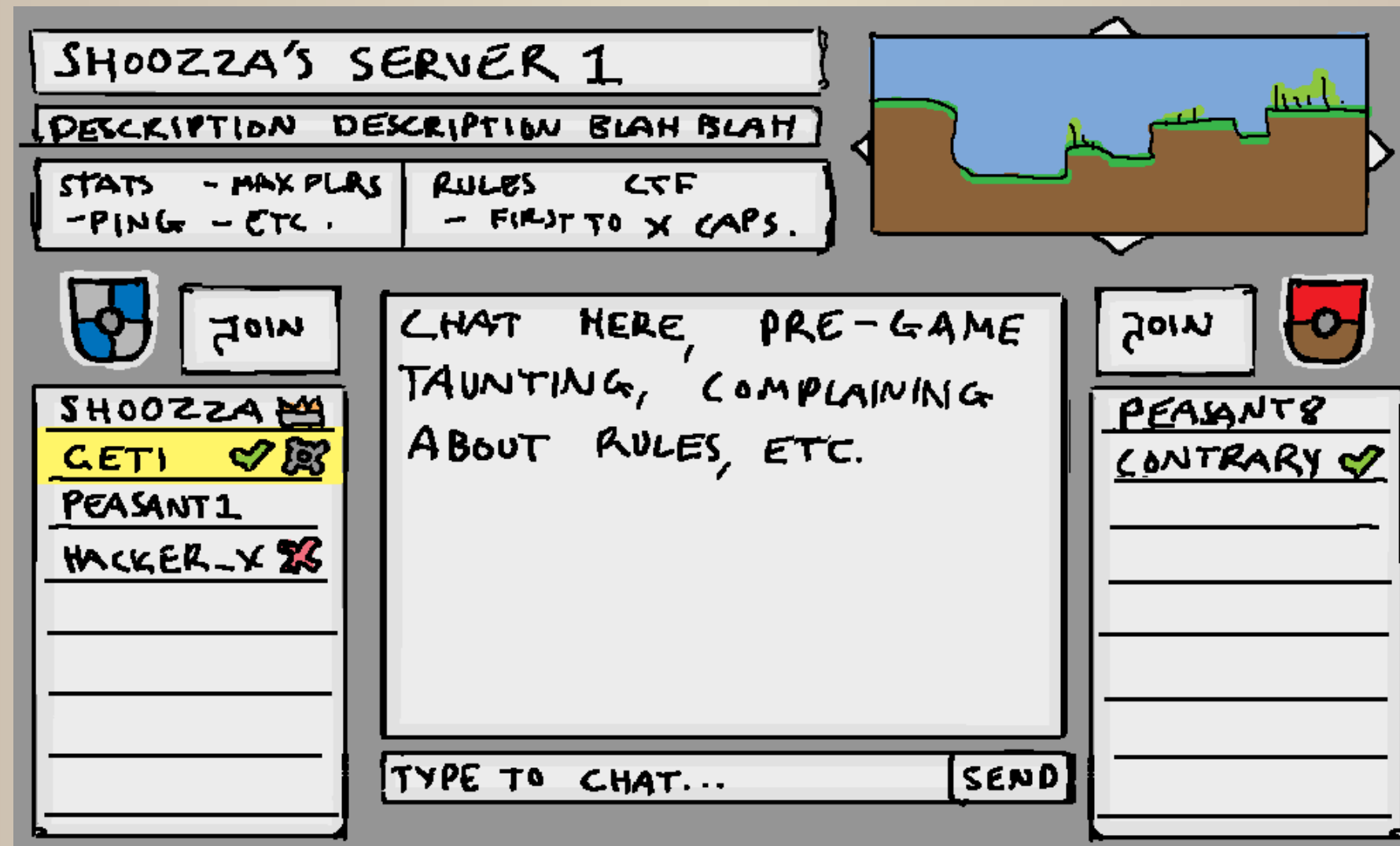
```

*full (bool)
*empty (bool)
IPAddress (string)
IPv4Address (string)
IPv6Address (string)
port (int)
*gameMode (string)
*currentPlayers (int)
*maxPlayers (int)
mostCurrentPlayers (int)
leastCurrentPlayers (int)
mostMaxPlayers (int)
leastMaxPlayers (int)
build (int)
current (bool)
*lastUpdated (ISO date)
firstSeen (ISO date)
connectable (bool)
*password (bool)
preferAF (bool)
*gold (bool)
*nameContains (string, partial match)
*name (string)
description (string - this is a bit silly, this probably won't be implemented)
descriptionContains (string, partial match)

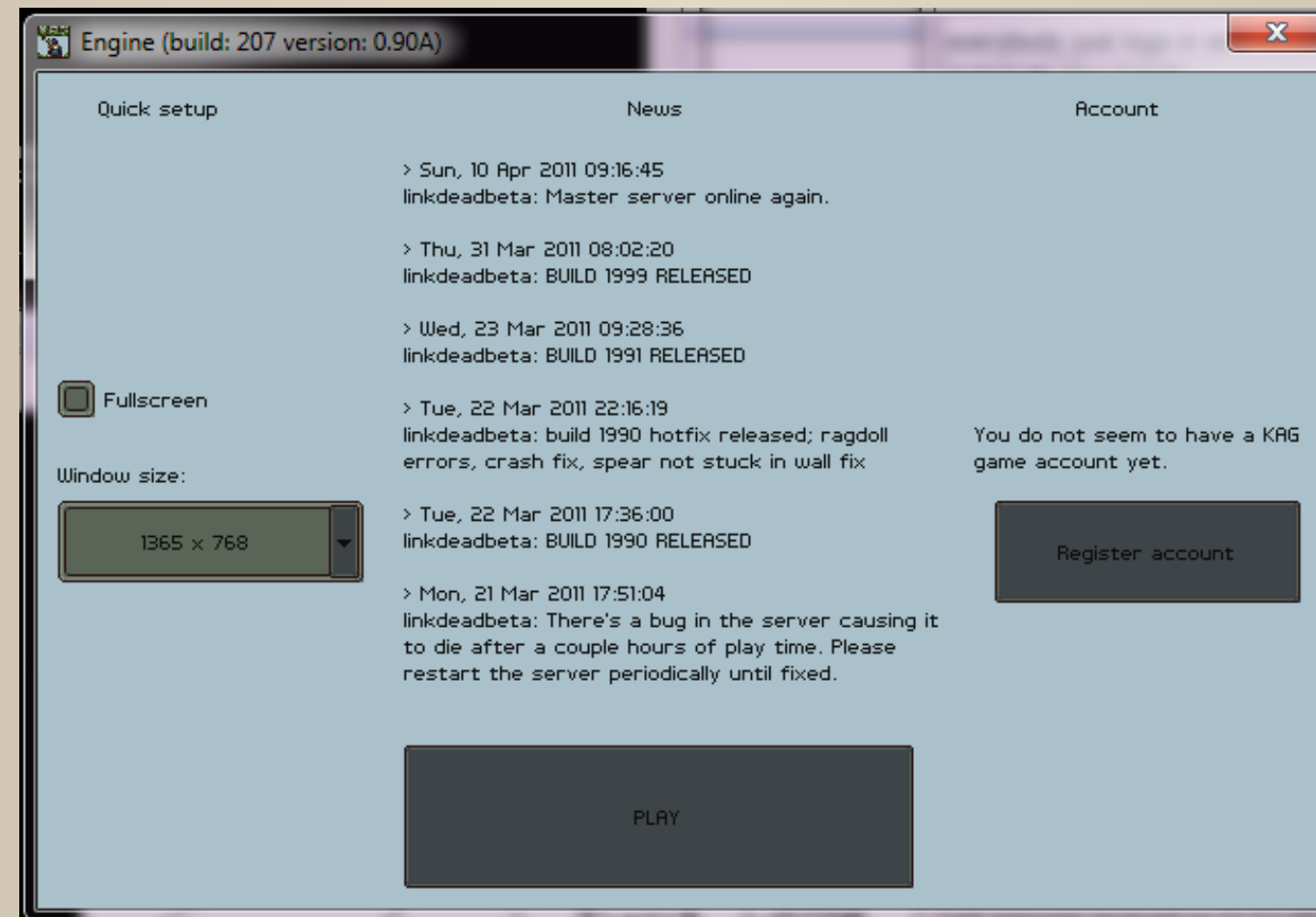
```

Sort by...

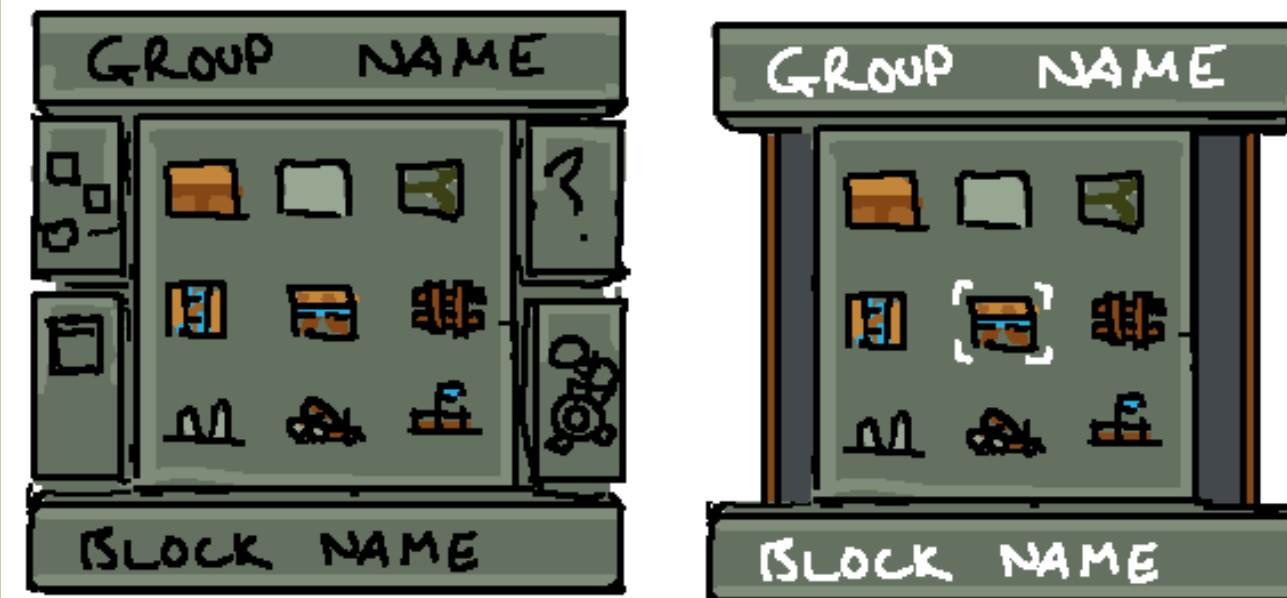
The "new" server browser using the API (by Tom & Ryan)



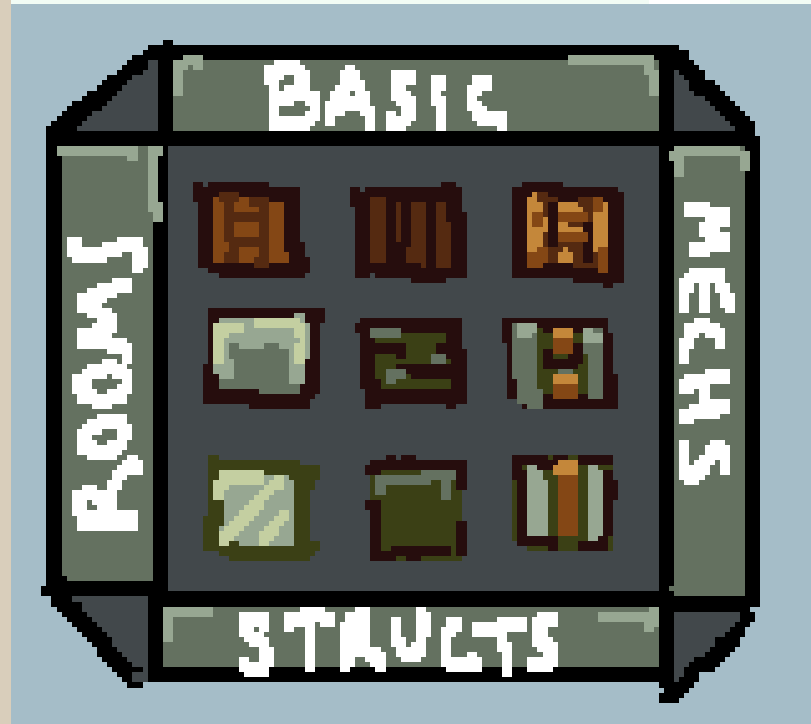
A servers browser with lobby



KAG launcher test

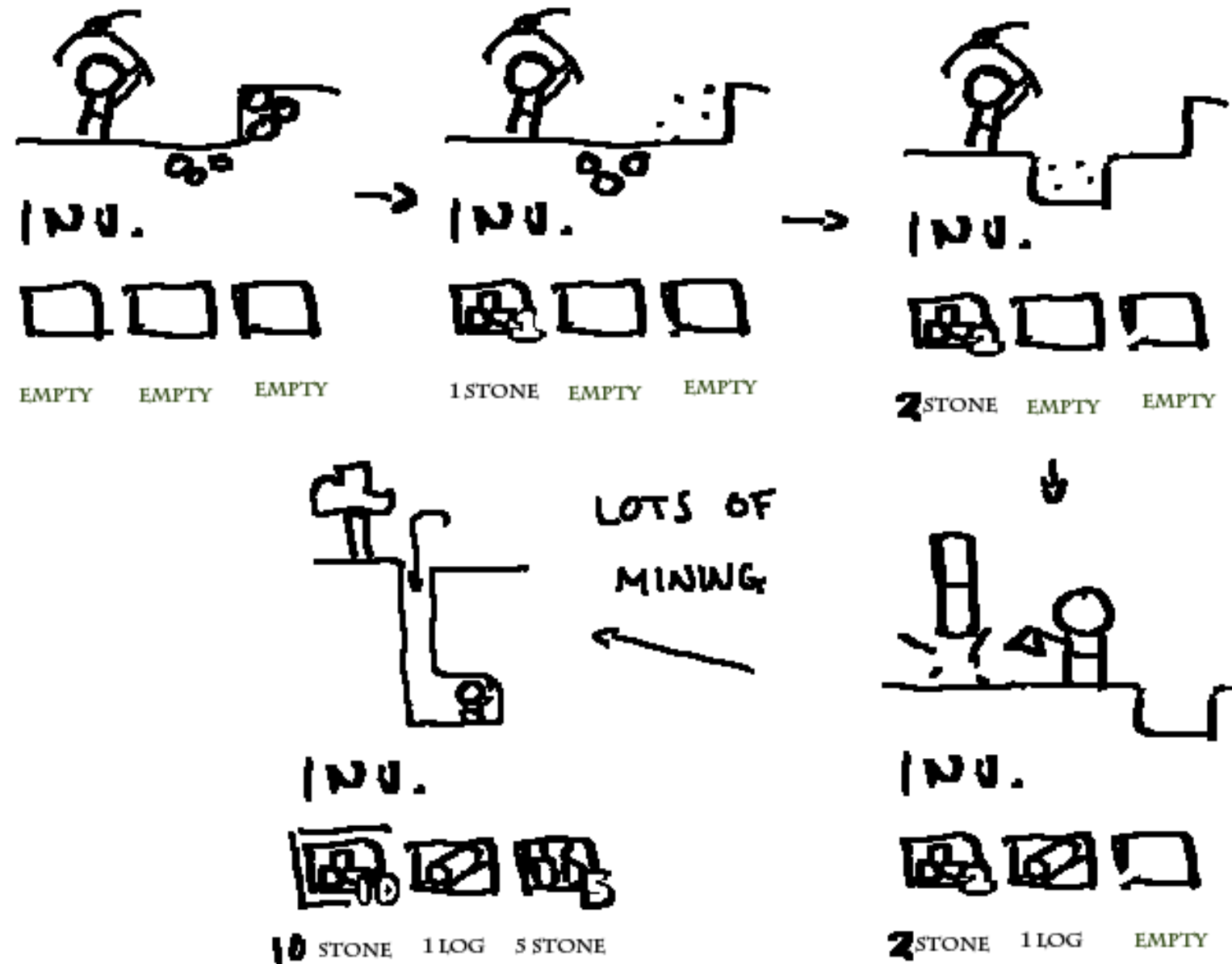


Builder menu



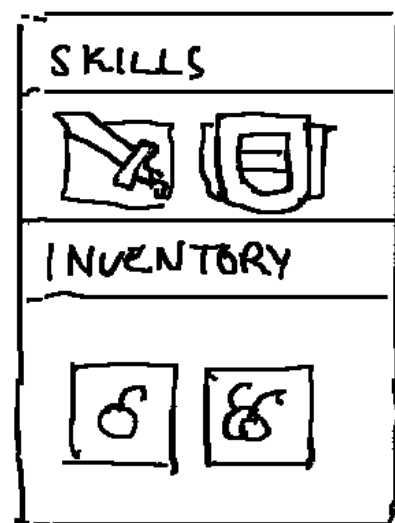


# Inventory



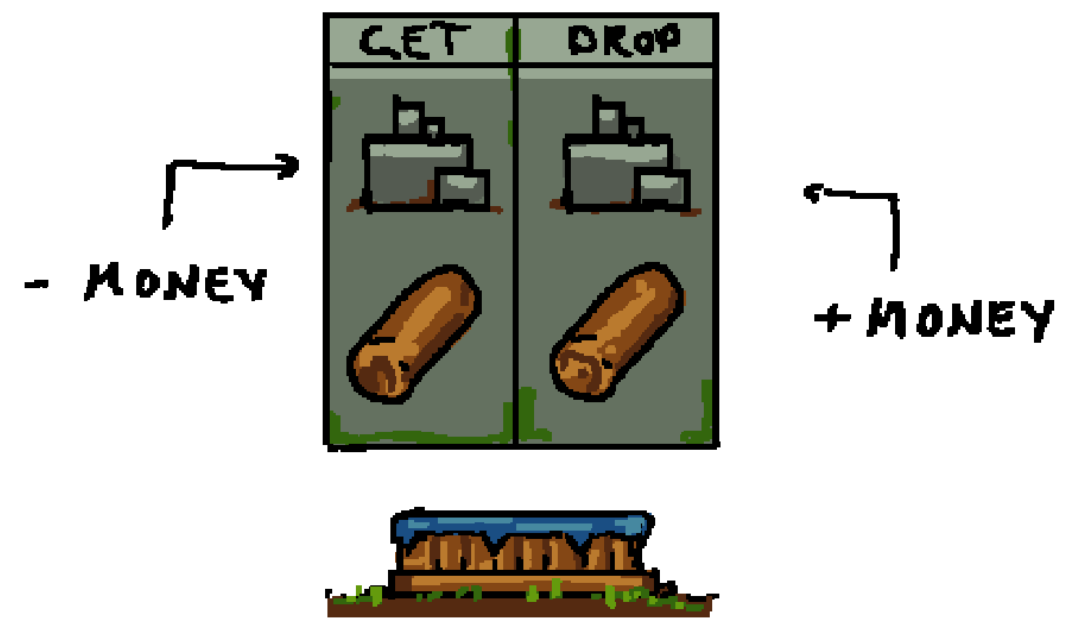
10 STONE WAS MINED - SO A NEW STACK IS STARTED IN THE FREE SLOT.

IF THERE ARE NO FREE SLOTS - THE SAME THING HAPPENS AS WHEN YOU HAVE A FULL "STACK" OF STONE NOW - THE BLOCKS JUST VANISH.

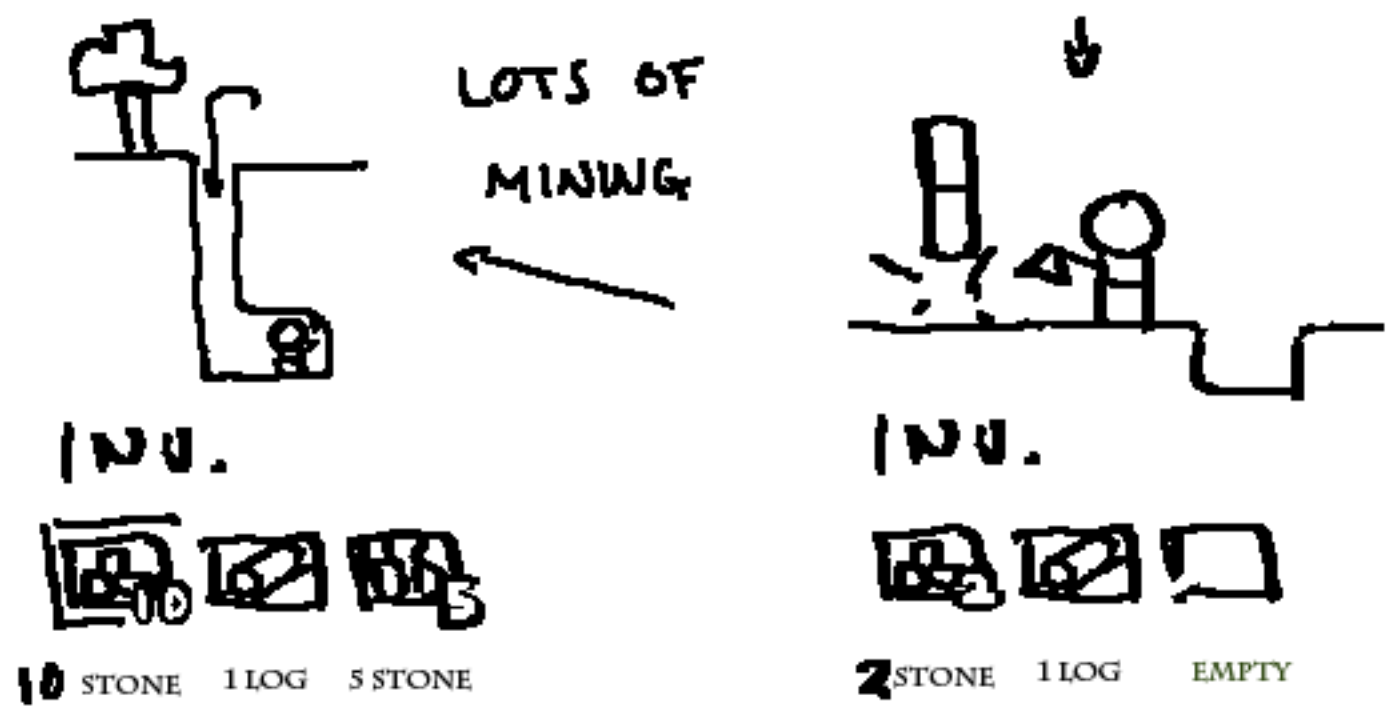
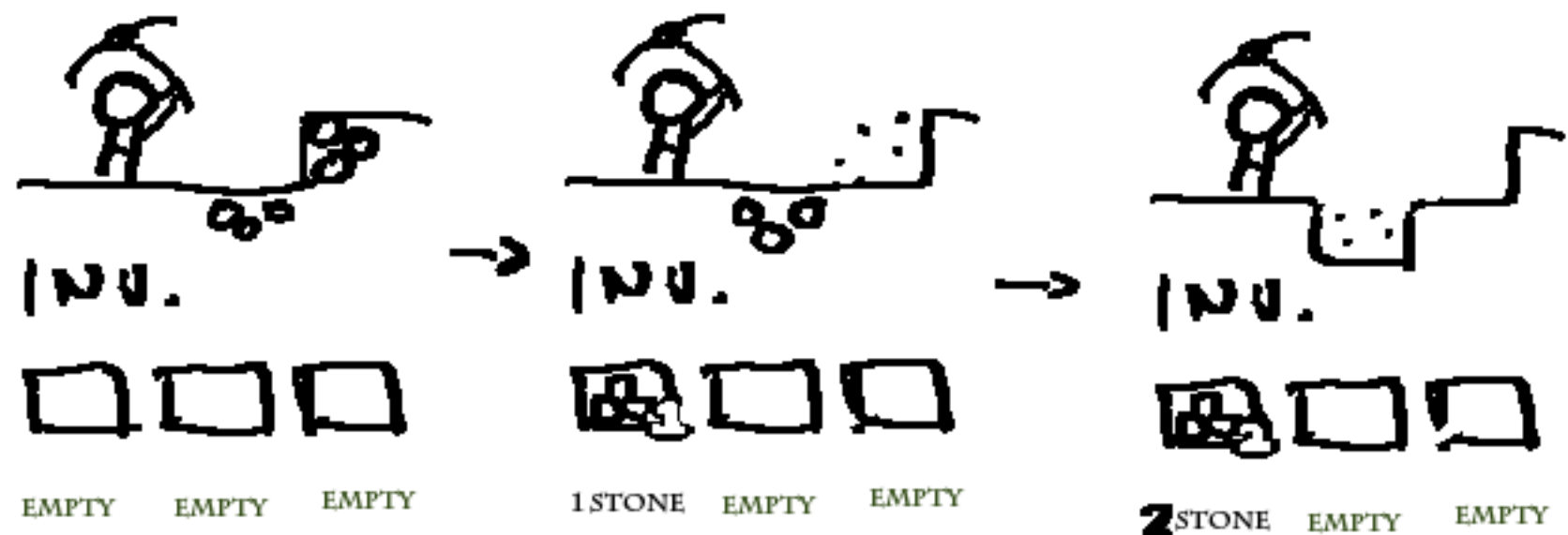


2x1 skill

2x1 inv.



A stockpile



10 STONE WAS MINED - SO A NEW STACK IS STARTED IN THE FREE SLOT.

IF THERE ARE NO FREE SLOTS - THE SAME THING HAPPENS AS WHEN YOU HAVE A FULL "STACK" OF STONE NOW - THE BLOCKS JUST VANISH.

F-MENU.



BLOCKS

BUILD CATEGORY  
ROOMS & WORKSHOPS



MECHANISMS  
(INCL. CATA)



ROOMS  
& WORKSHOPS.

BUILD  
MENU.



BACK



200 POINTS  
AT SELECTED  
ICON

CATAULT  
FIRE!



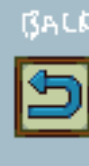
LOAD ITEM



LOAD SELF



ENTER  
DROP MODE



BACK

COINS



300

INTERACT.

ACTIONS  
INVENTORY



PICK UP  
(PAINT IF 1



• CROSSED IF  
NO BLOC.  
• ICON OF  
BUILDING  
OTHERWISE  
(EG CATA)

INVENTORY  
STONE (19)



5



12



19



26



2

SCALES CHANGE  
IMAGE BASED ON  
FULLNESS



MISCELLANEOUS  
SUICIDE



SWAP TEAM

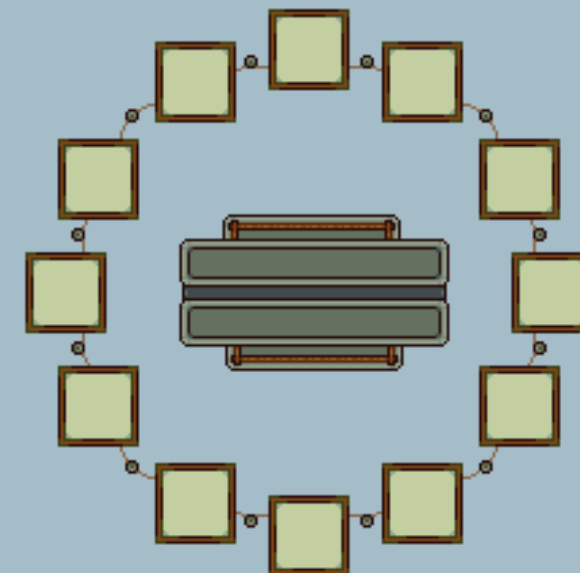


SPECTATE

MISC  
(CRAP ICON)

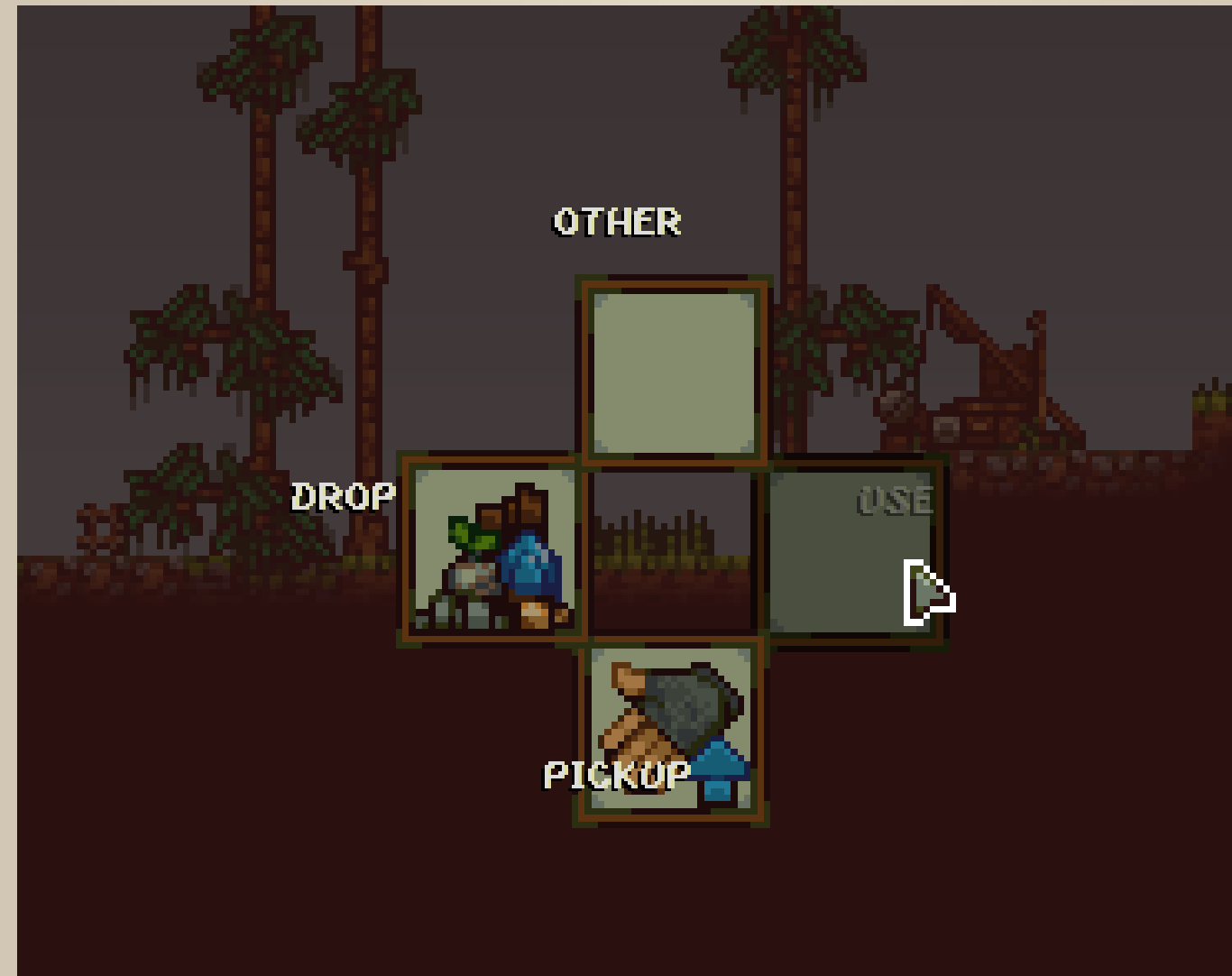


TEMPLATE.



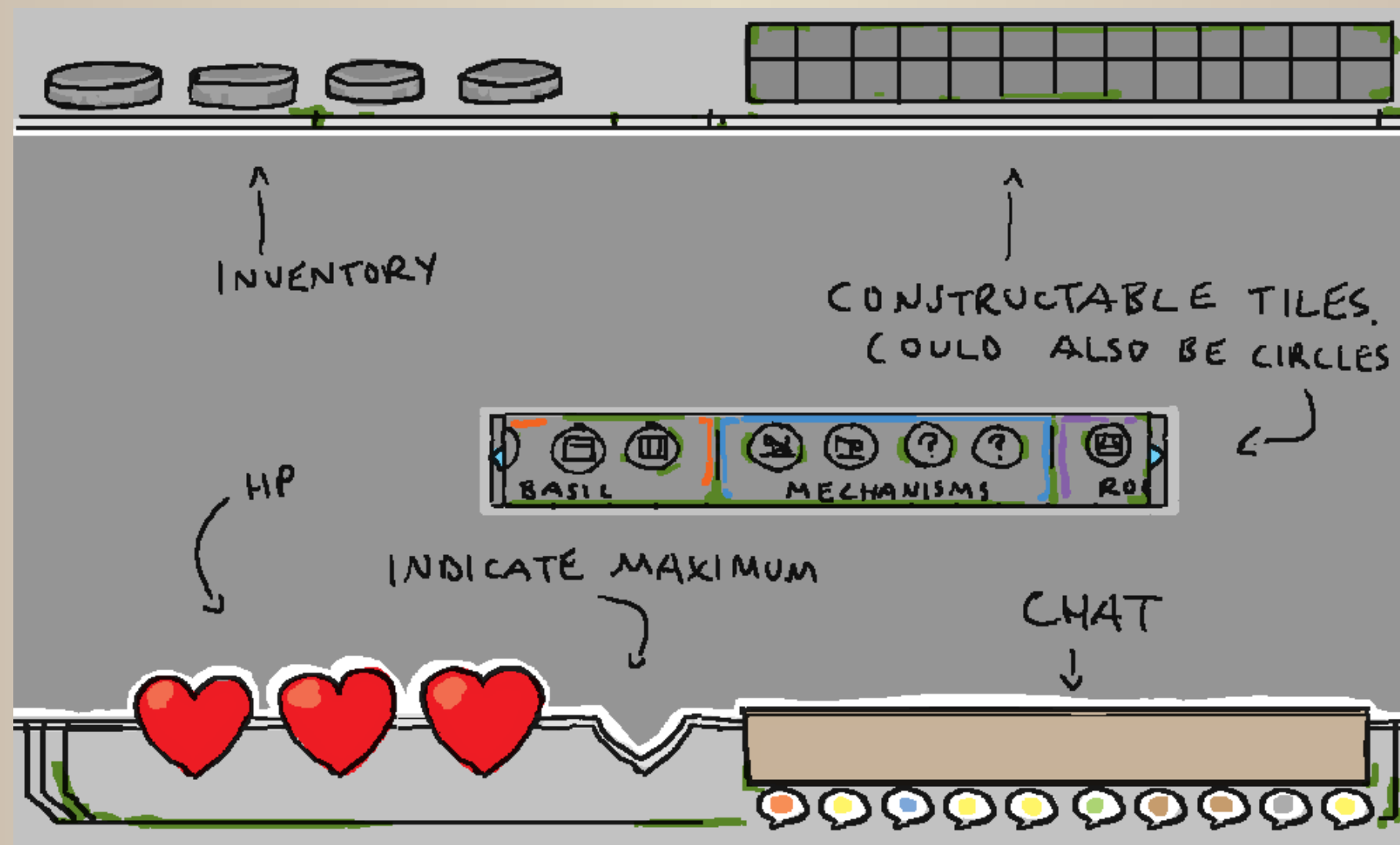


Idea if dividing into "play" area and "interface" area.



The "cross menu"

# HUD concepts





♥♥♥♥  
 L [W] R [E]  
 [A] [B]  
 [C] [D]  
 FUNDS: 1024  
 [CHAT]  
 [MAP]

♥♥♥  
 CLASS  
 KNIGHT  
 10 200  
 170 1  
 5 2  
 FUNDS: 1024  
 [CHAT]  
 [MAP]

BASIC  
 [W] [E] [A]  
 [B] [C] [D]  
 [F] [G] [H]  
 ^^HOVER^^

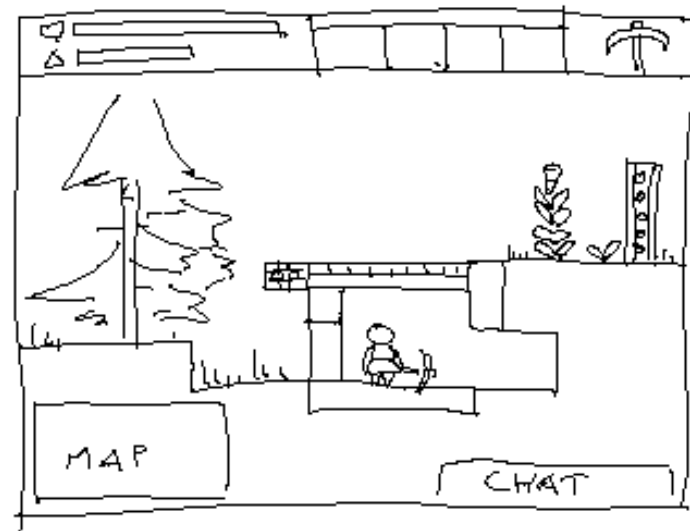
- BASIC
  - WOOD / STONE
  - WALLS
  - LADDERS
- MECHANISMS
  - DOORS
  - SPIKES
  - WINCHES
  - CABLE
- ROOMS
  - HALL
  - BOMB

♥♥  
 [W] [E] [A]  
 [B] [C] [D]  
 [F] [G] [H]  
 [I] [J]  
 [K] [L]  
 [M] [N]  
 [O] [P]  
 [Q] [R]  
 [S] [T]  
 [U] [V]  
 [X] [Y]  
 [Z] [AA]  
 [AB] [AC] [AD] [AE]

CHAT: ENTER  
 [V] [W] [X] [Y] [Z]

♥♥  
 [W] [E] [A]  
 [B] [C] [D]  
 [F] [G] [H]  
 [I] [J]  
 [K] [L]  
 [M] [N]  
 [O] [P]  
 [Q] [R]  
 [S] [T]  
 [U] [V]  
 [X] [Y]  
 [Z] [AA]  
 [AB] [AC] [AD] [AE]

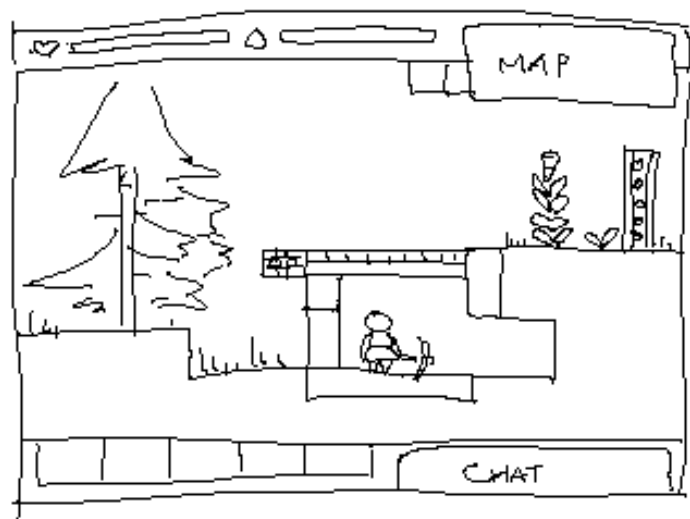
CHAT: ENTER  
 [V] [W] [X] [Y] [Z]



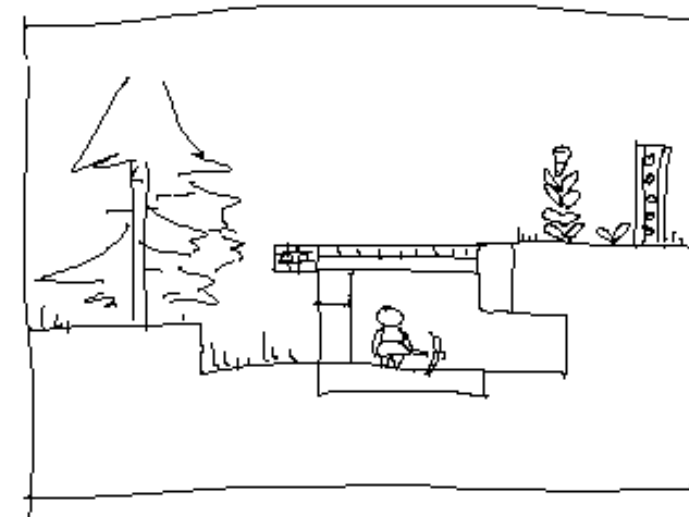
TOP BAR  
FLOATING




SIDE BAR  
SOLID




TOP BAR  
MOSTLY SOLID






---



|  |     |
|--|-----|
|  | 100 |
|  | 20  |
|  | 0   |
|  | 120 |

---

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

---

**SQUAD**

---

**CHAT**  
 blah blah  
 talk talk.

---

|                      |                      |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |
|----------------------|----------------------|

← HP + ST

← MATS

← class specific actions (F MENU)

**SQUAD**

|          |  |  |
|----------|--|--|
| GETI     |  |  |
| HENRY    |  |  |
| HENRY    |  |  |
| HENRY    |  |  |
| YOUR_MUM |  |  |





---

ORDER <    >

FIRE:

← EXPANDS ON HITTING  
 RETURN,

← MENU BUTTONS?

|   |  |
|---|--|
| ♥♥♥   |  |
|  |  10 |
|   |  40 |
|   |  50 |
| BUILDER   | ○ 100  |
| B<br>U<br>I<br>L<br>D   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>           |
|   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>           |
|   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>           |
| SQUAD   |  |
| MAP   |  |
| CHAT  |  |
| asd45: lol<br>guy.mani you<br>know what<br>I think...                             |  |

← will have

status later.

coins cap → must bank  
coins

→ heists

← MAX 9 bld options





→ WORKSHOPS  
SWAP OUT

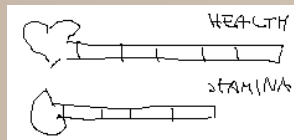
AVAILABLE BLOCKS

script your own HUD.

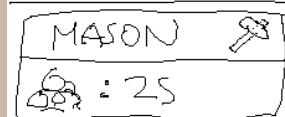
norm: status; class; action; map; chat

minimal: status; action; chat;

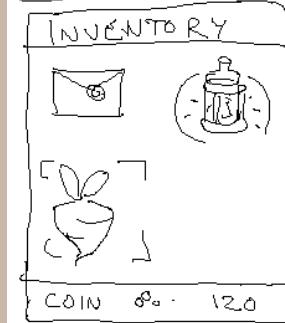
|   |  |
|---|--|
| ♥♥♥   |  |
|  |  10 |
|   |  40 |
|   |  50 |
| BUILDER   | ○ 100  |
| B<br>U<br>I<br>L<br>D   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>             |
|   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>             |
|   | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>             |
| SQUAD   |  |
| MAP   |  |
| CHAT  |  |
| asd45: lol<br>guy.mani you<br>know what<br>I think...                               |  |



HP + ST BARS.



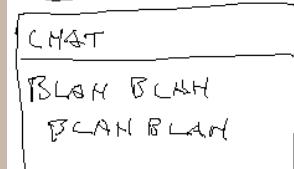
CLASS & RELEVANT  
MAT LISTED.



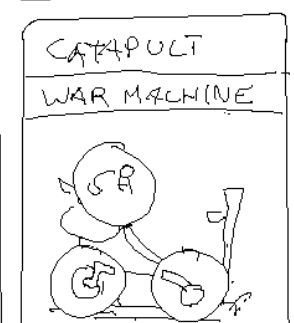
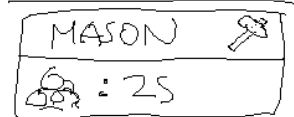
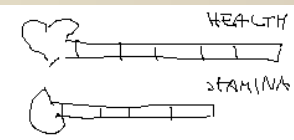
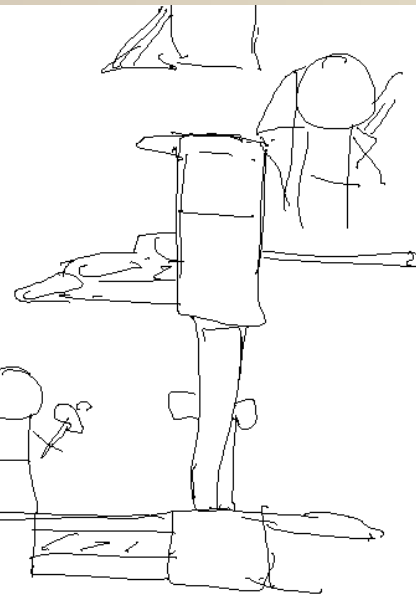
CLICK ITEMS TO  
EQUIP



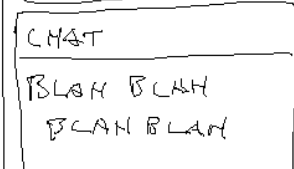
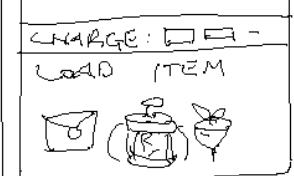
M SWAPS PARTY OVERVIEW TO MINIMAP



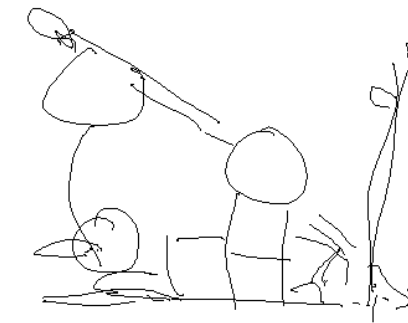
← CHAT SLIDES UP



↘ USE  
MOUSE  
HERE  
↙

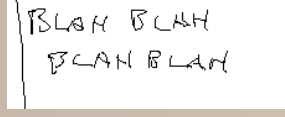
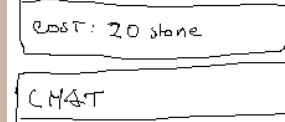
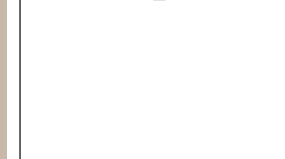
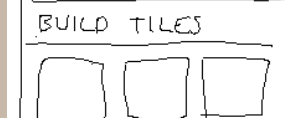
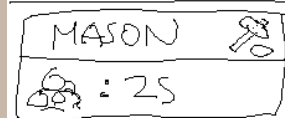
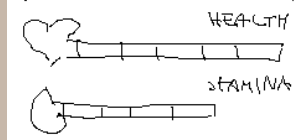


WALK OUT OR HIT  
E TO STOP INTERACTING

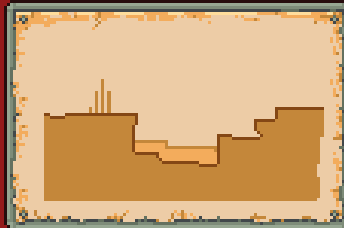


CAN STILL MOVE  
WASD.

SCREEN UNCOVERED.

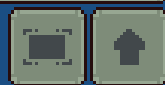
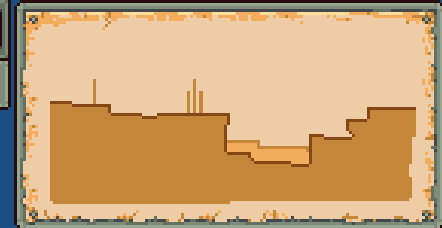


Game HUD for the left player showing a red health bar, icons for 20, 0, 50, 52, 152, and a score of 0000152.



Game HUD for the right player showing a blue health bar, icons for 20, 0, 50, 52, 152, and a score of 0000152.

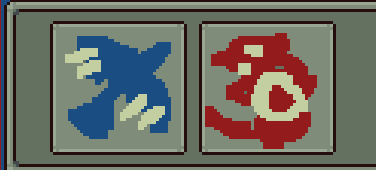
Item interaction menu for the right player with buttons labeled 'Drop', 'Drop', 'USE', 'Drop', 'Drop', and 'Drop'.



TOP PLAYERS

- Four empty rectangular slots for displaying top player information.

SWAP TEAMS



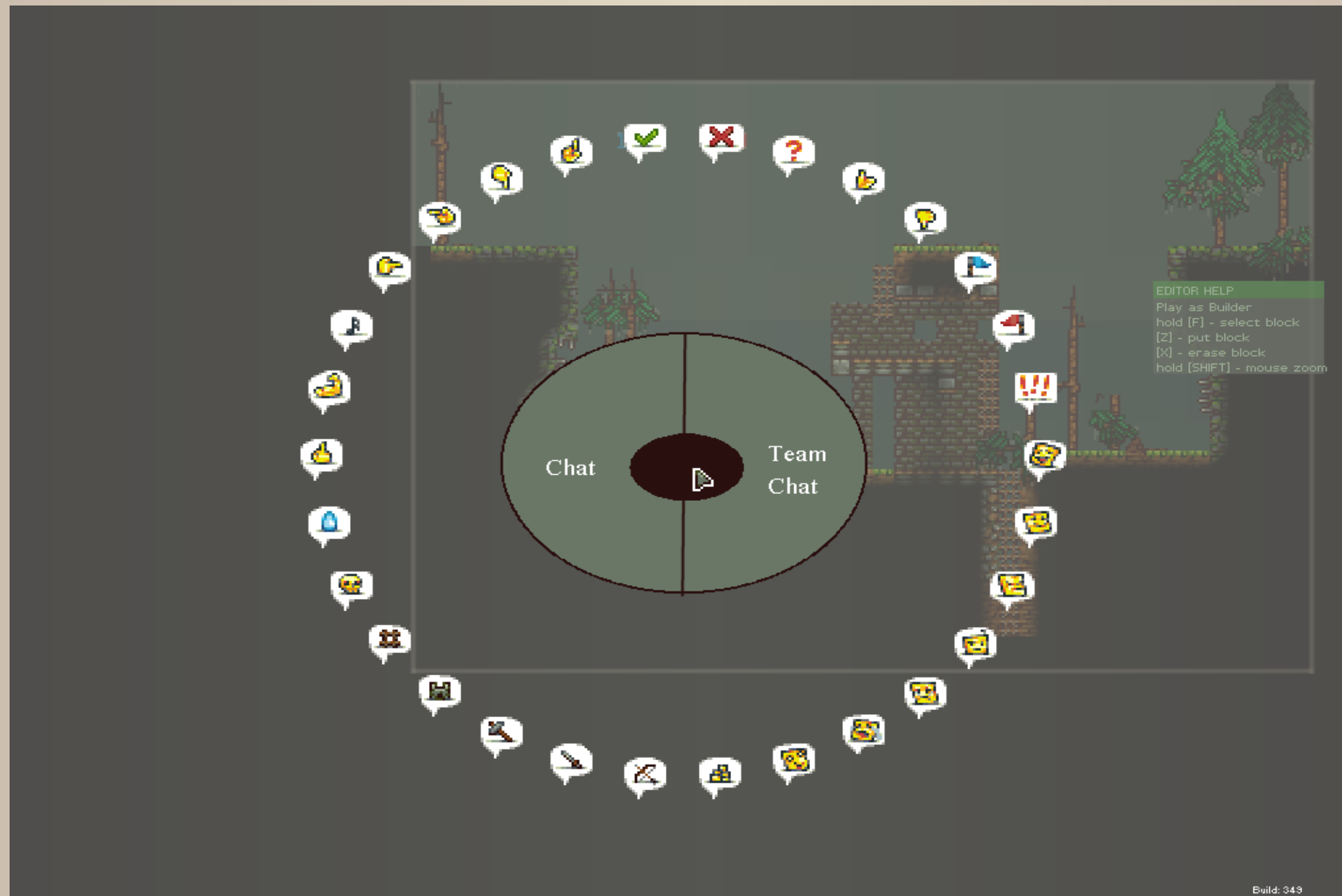
CLICK HERE  
= BACK TO  
GAME  
= MINIMIZE

JOBS

- + ADD A JOB
- SO BUILDING TASKS

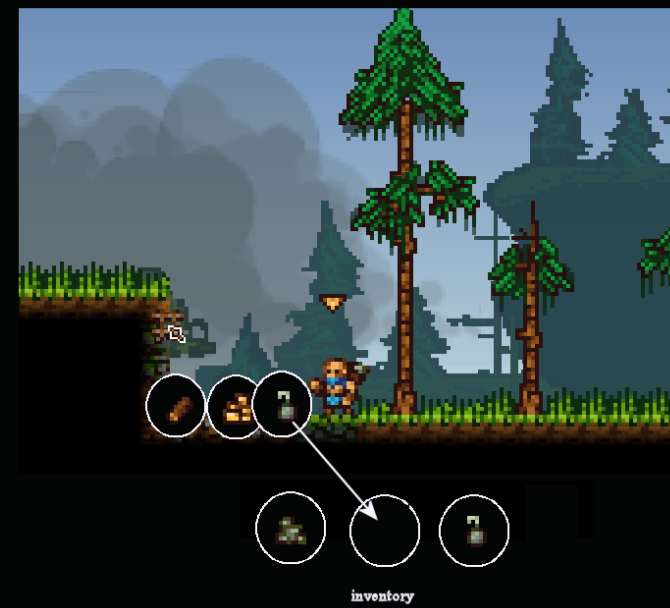
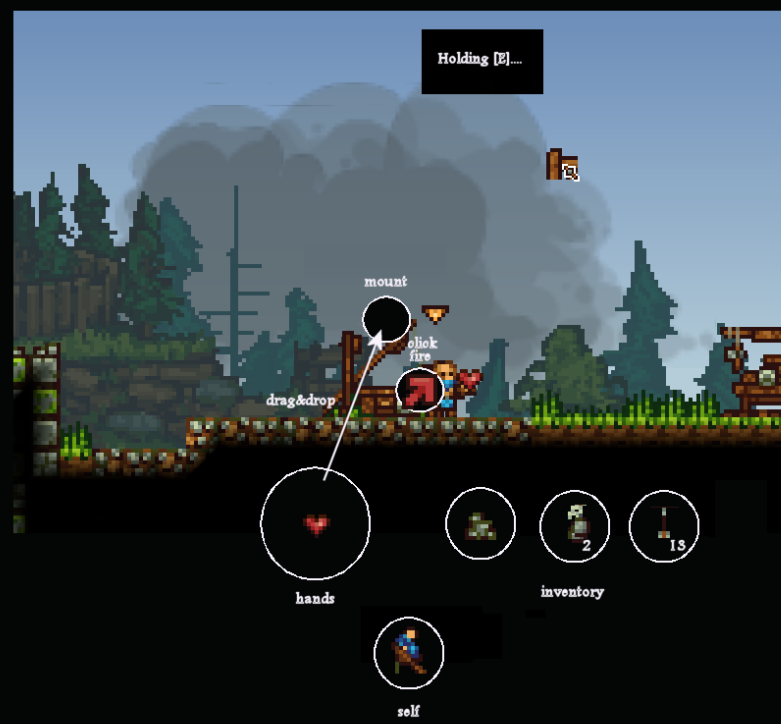
CHAT





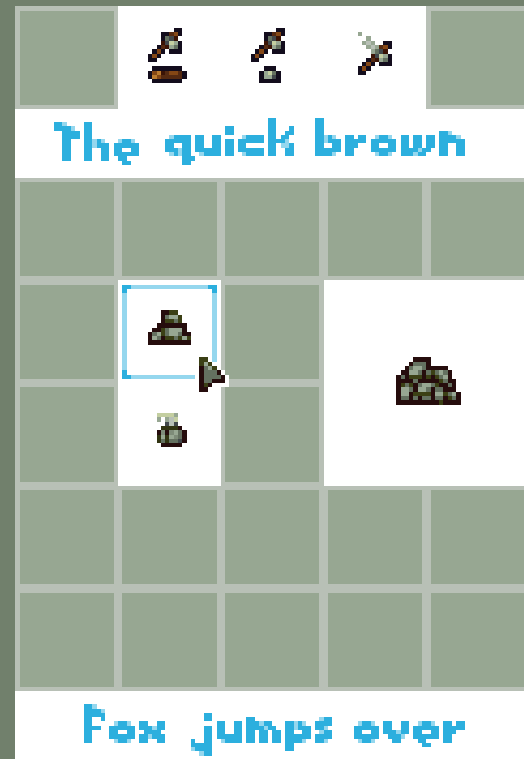
Idea of merging emoticon menu with chat





Basically...

Inventory slots only pop-up when you're holding [E]. You can then rearrange them, drop or drag into other objects.



MY POPUP .

GETI: TEST CHAT  
BOX . SMALLER =  
FURTHER AWAY



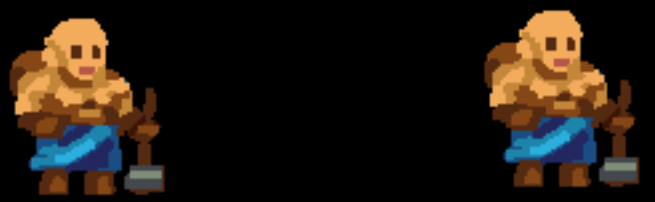
Health: 2 hearts  
Character: Archer  
Resource: Wood 50

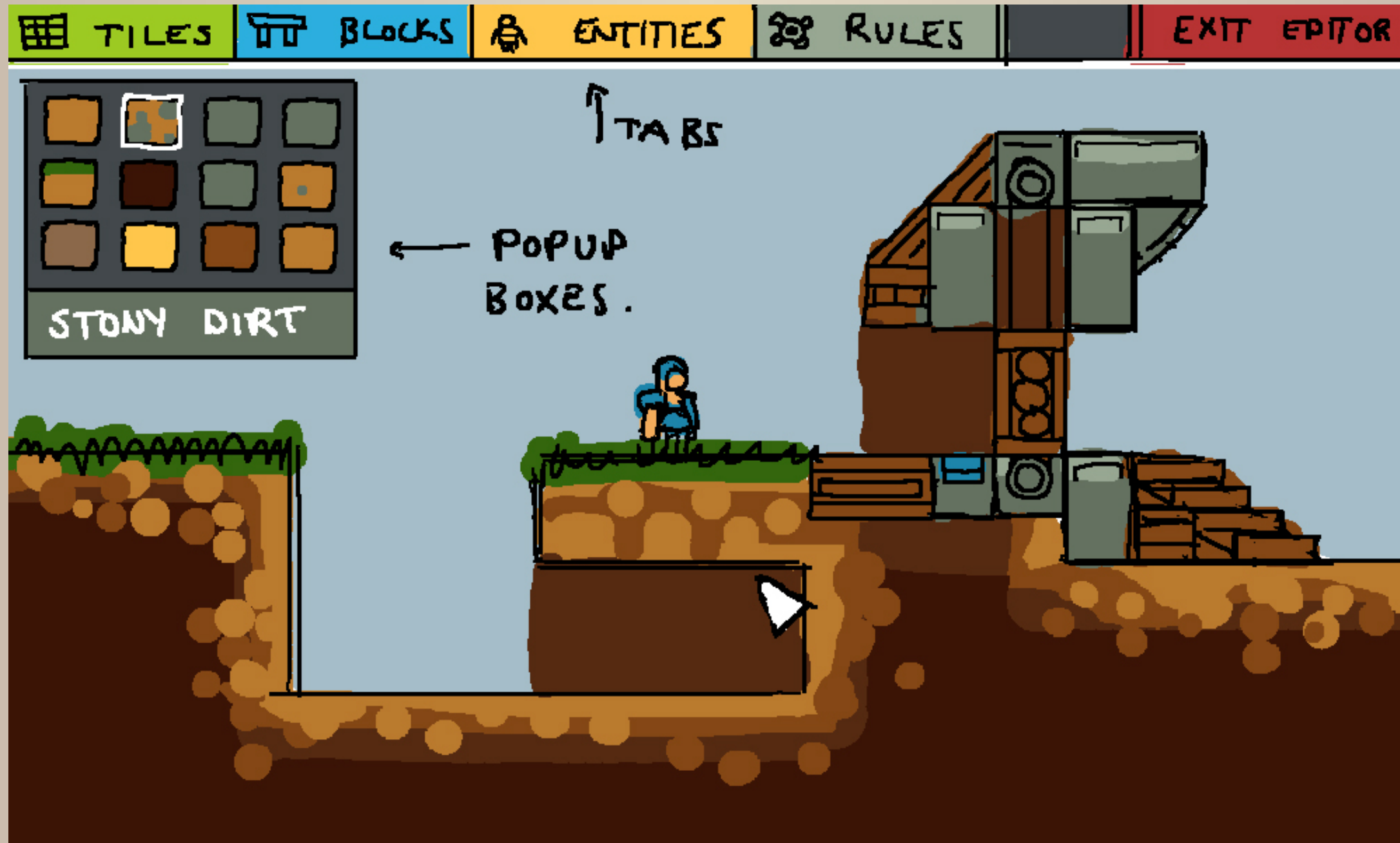
Hand icon  
Bomb icon  
Resources: 50 (wood), 10 (meat), 30 (stone), 43 (gold)

Character: Miner  
Resources: Stone, Wood, Building



... CHAT CHAT!





In-game editor





Help for beginners



7 11

Defend the hall!

Gather resources



MM2 connected.  
New player joined the game  
<MM2> asd

chat [T] team [Y]

250 250 250



7 11

Defend the hall!



250 250 250



MM2 connected.  
New player joined the game  
<MM2> asd

chat [T] team [Y]

Gather resources

250 250 250

7         11

Defend the hall!



MM2 connected.  
New player joined the game  
<MM2> asd

chat [T] team [Y]

 Gather resources   

250 250 250

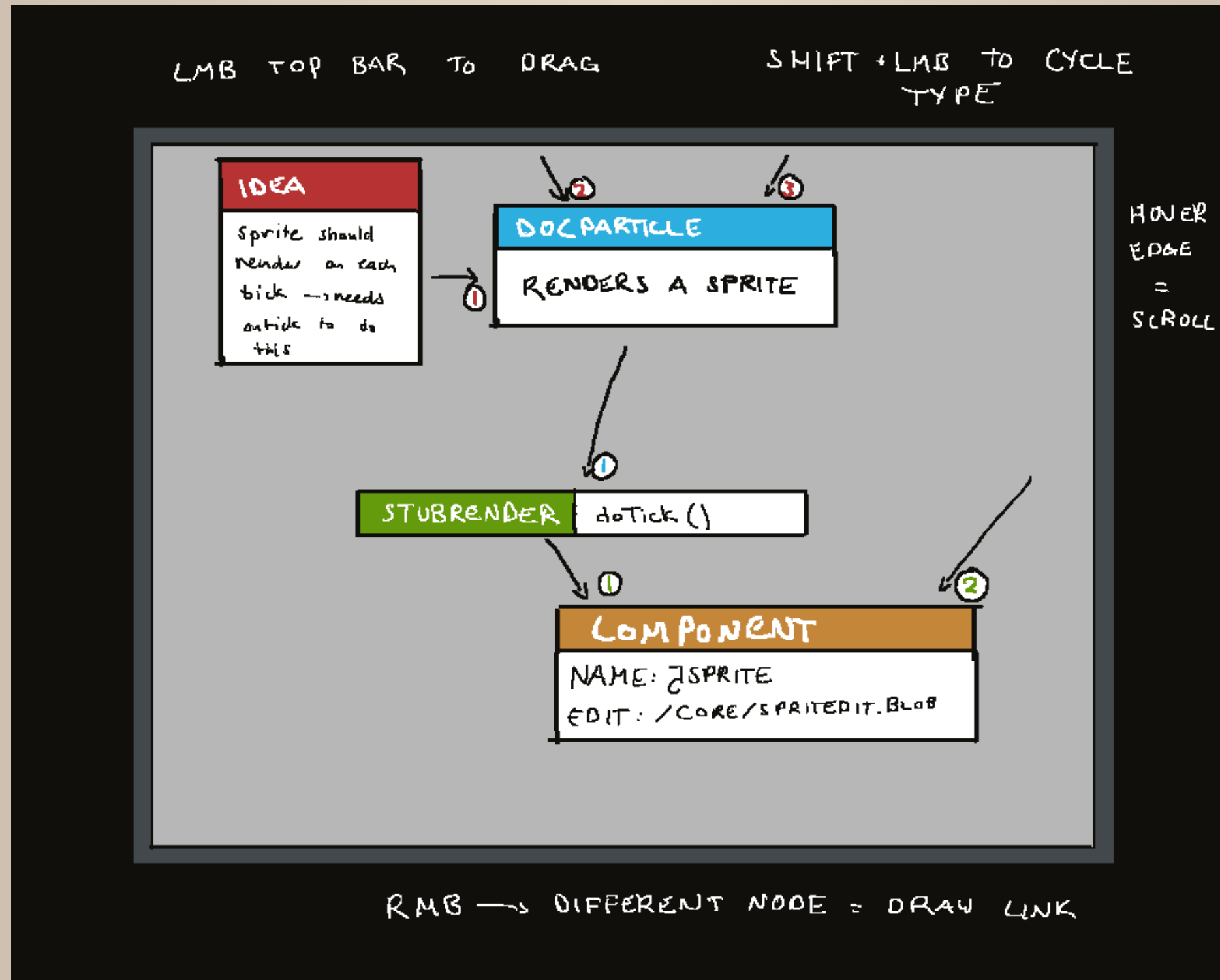
Health: 3 hearts  
Resources: 250 Wood, 250 Stone, 250 Gold  
Action: Gather resources

7 [Eagle] [Shield] [Shield] [Shield] → [Shield] [Shield] [Shield] [Bear] 11  
Defend the hall!



MM2 connected.  
New player joined the game  
<MM2> asd  
chat [T] team [Y]

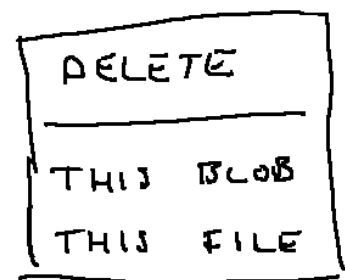
# Ideas for a runtime code editor



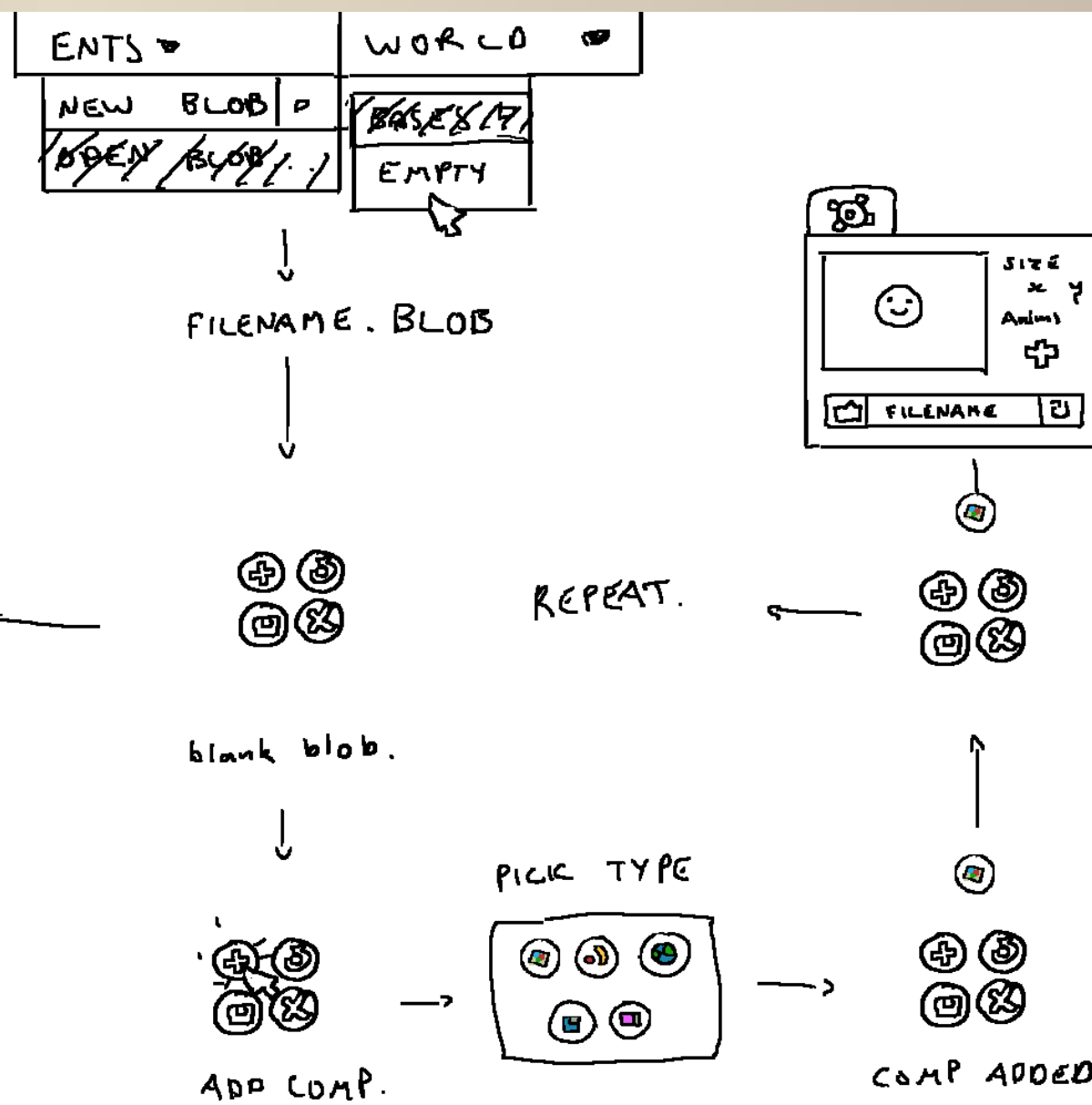


MAYBE NEED  
DUPLICATE  
+ CONTROL

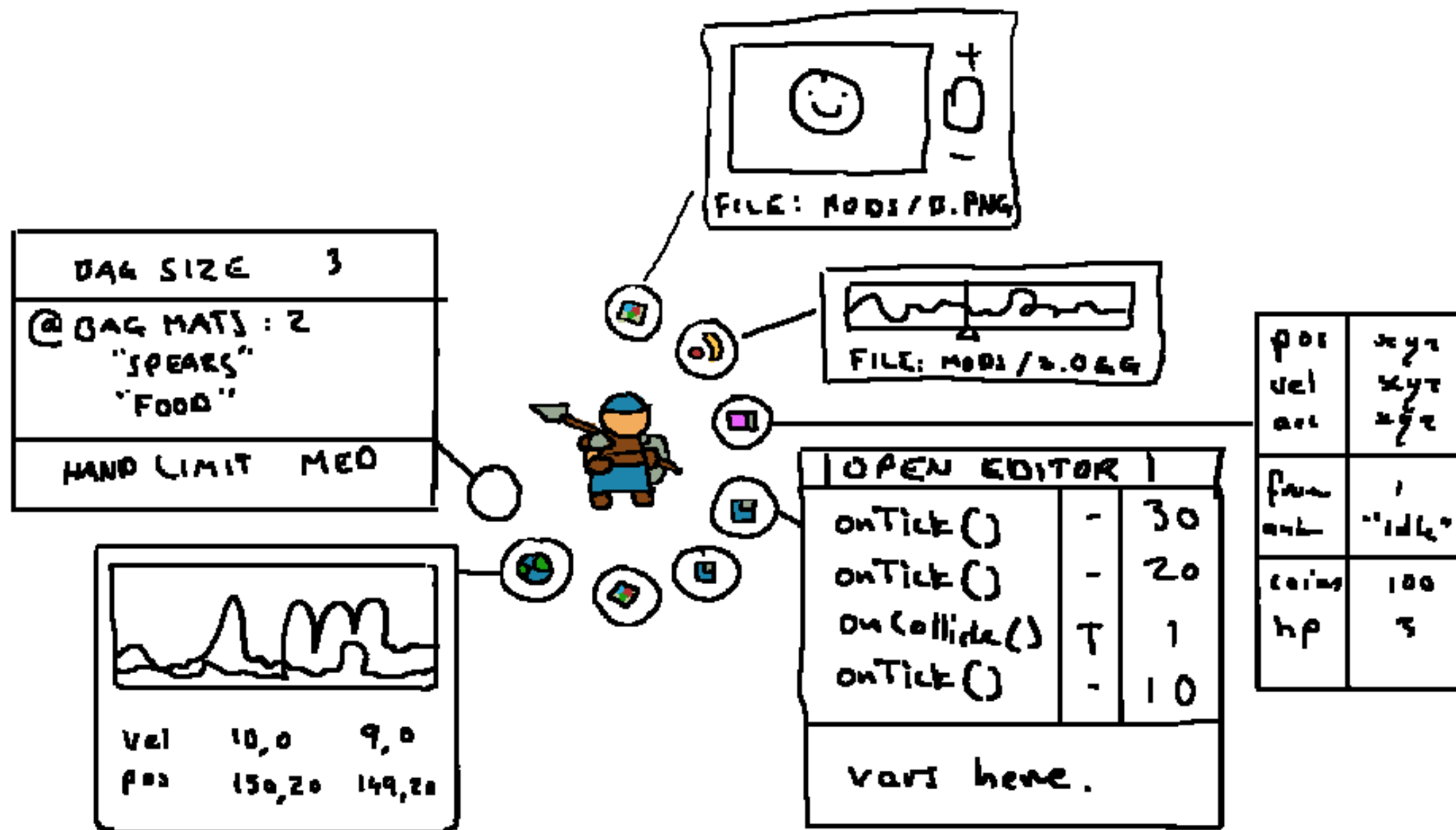
EDITOR  
"FILE BAR"  
w/ much more fun  
buttons!



REALLY?

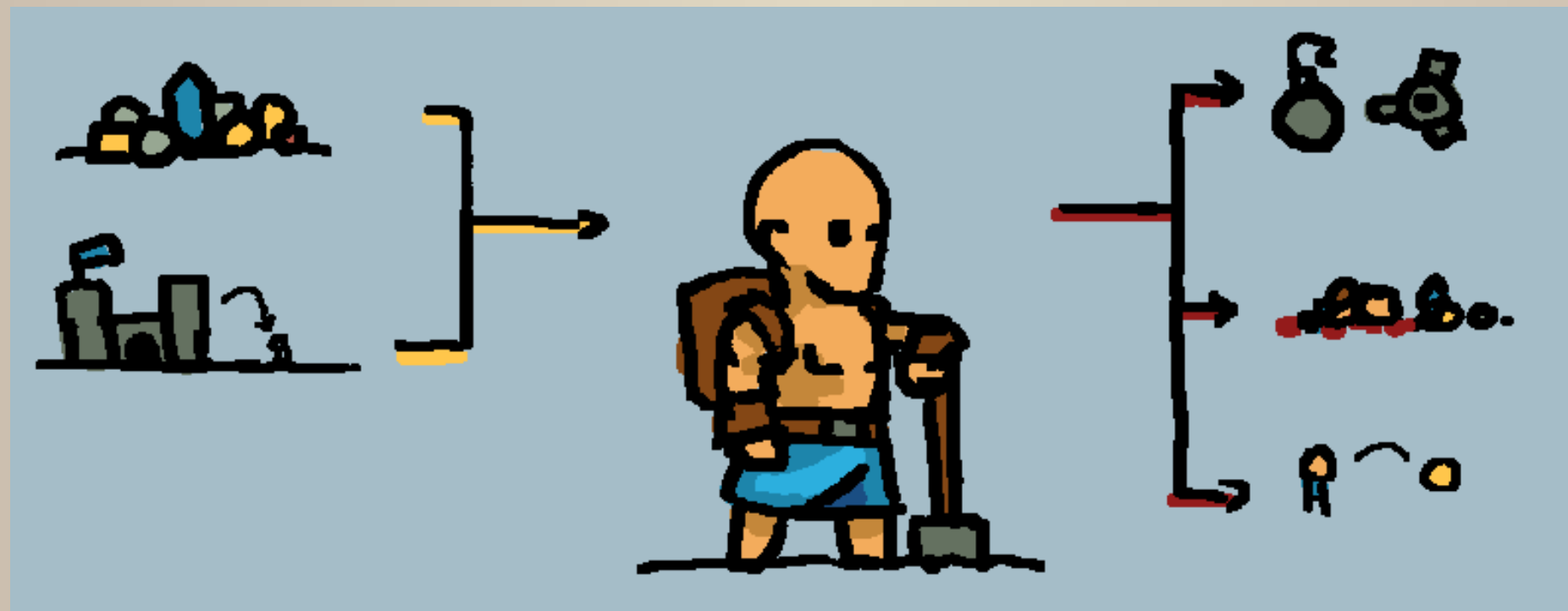


An ingame entity editor





# Economy



MONEY IN

**FUNDS**

MONEY OUT

PICKED UP



WAGES



Purchase items



drop on death



drop by choice

BANK: MEDIEVAL ATM.



- TAKES 20 FUNDS PER DEPOSIT
- MEANS YOU CAN AVOID LOSS FROM FIGHTING.

• MEANS HEISTS CAN HAPPEN!

WAGES:

TEAM GETS RICHER WITH GOLD + GEMS

WORK x RICHNESS = \$  
RATE

FUNDS.

Use directly  
at buildings  
(funds ->  
bombs at  
armoury)

MARKETPLACE

gunpowder

resources  
(marked-up)

"Specials"



Class upgrades  
(1000 funds etc)



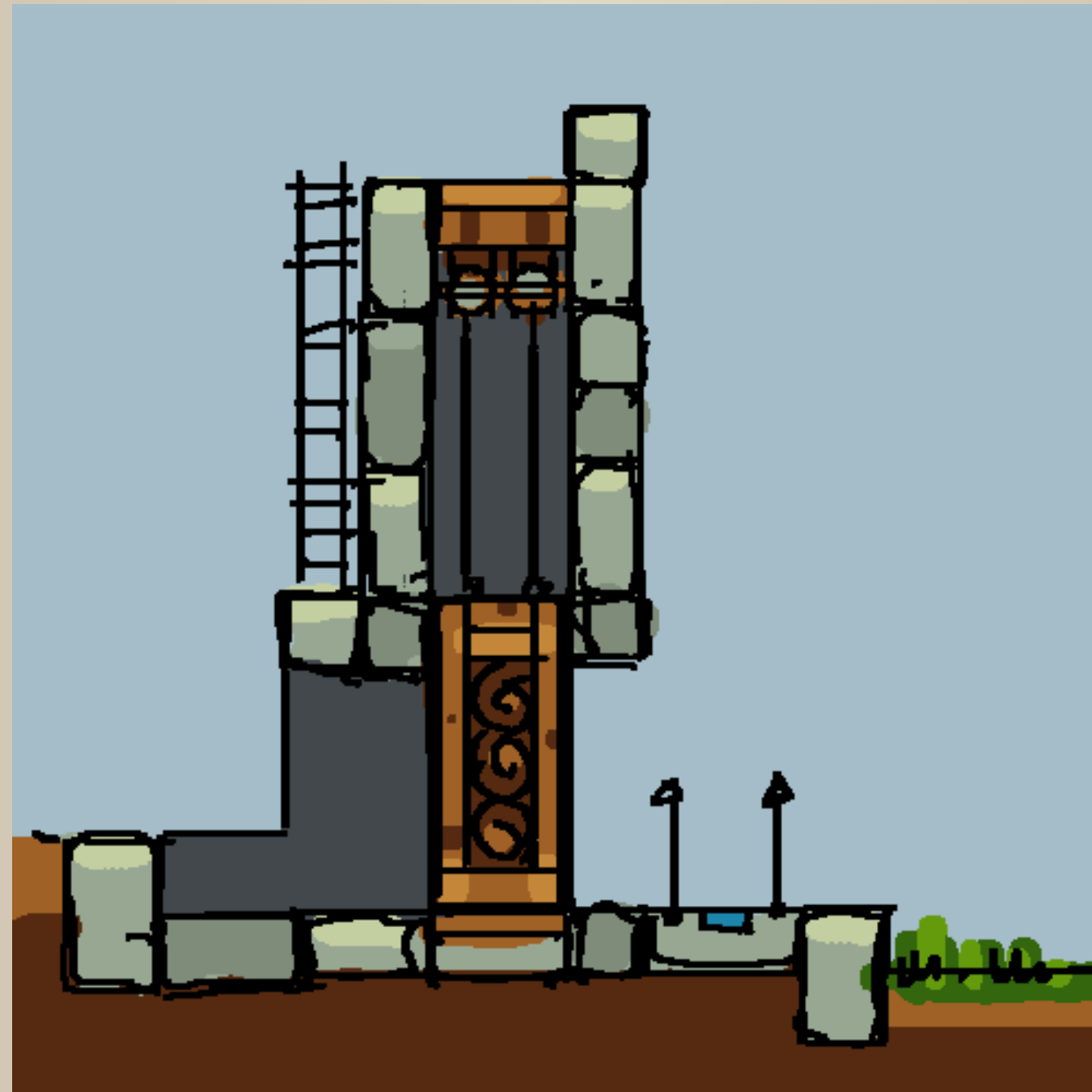
Randomly generated collections  
of items and rare items

- "5 stone + 3 wood FREE!"
- mechanism kit (lets you build  
a whole catapult or ram or  
stone pot in one go)

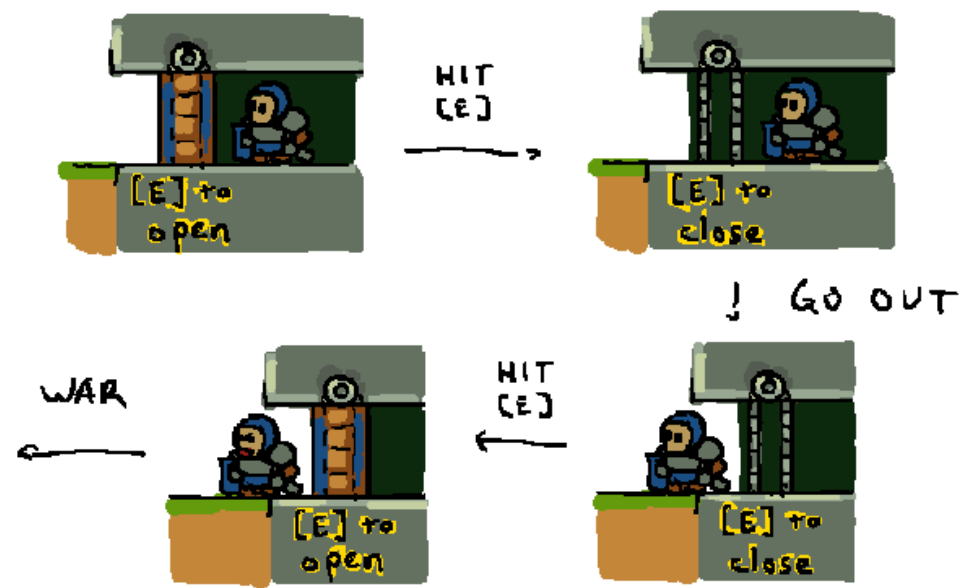
maybe there's a gambling den if you  
have an upgraded market where players  
can whittle away their cards on  
blackjack ;) (or just double or  
nothing because it's easier with  
random numbers and no gui, just the  
NPC yelling the results at you)



# Mechanisms



# INTERACTIVE FORTRESS: (FEELS MORE TANGIBLE)



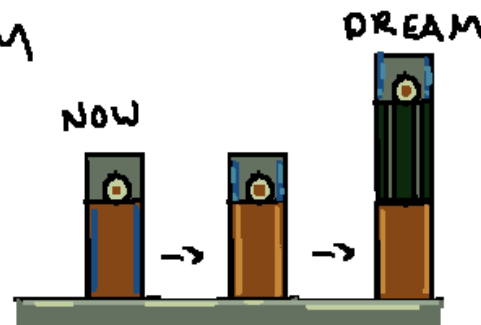
## OPEN / CLOSE DOORS.

This prevents accidental opening and encourages single-layer doors as multiple layers can't be opened/closed without crushing yourself. This creates weak points in castles which encourages raiding.

## DOORS / BRIDGES DONT HAVE A TEAM

But the mechanism that controls them does. That means you can rip out and replace the enemy mechanisms and put your own in if you take over a frontline fort, without having to pay for the expensive door blocks.

The mechanism would detect friendly units within a tile on each side of the door or itself -> you could have someone operating the doors from above (beside the winch) as well. The door could glow with 1px white/yellow to indicate what the player was interacting with.



## DRAWBRIDGES

These could use the same winch object as a door, just placed at either/both ends. [E] to operate only happens near a winch.

I think being able to use the enemy's bridge if they aren't around a great thing - much better than getting shredded by it ;)

It'd also lead to some hilarious moments with people taking the ground out from each other's feet.

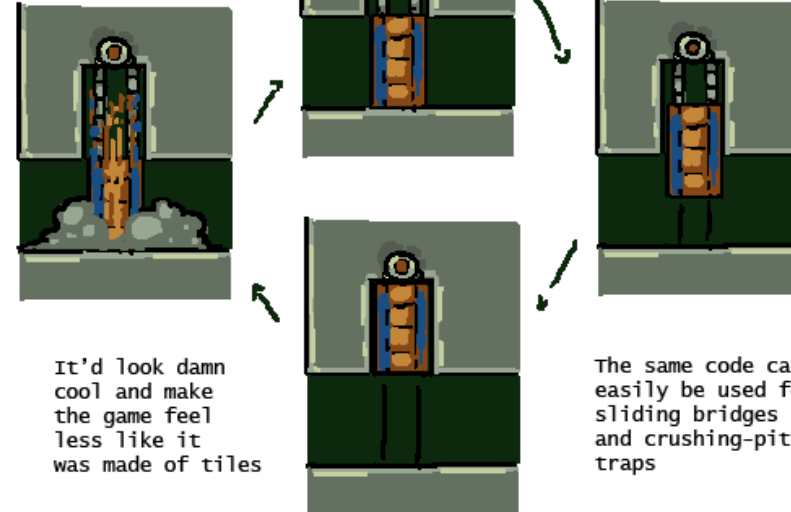
This also solves the "how to drawbridge issue" without using levers.

## DOORS SHOULD SLIDE:

sliding doors are better because:

They allow units to be crushed in the doorway

They make the castle feel like it's made of moving parts



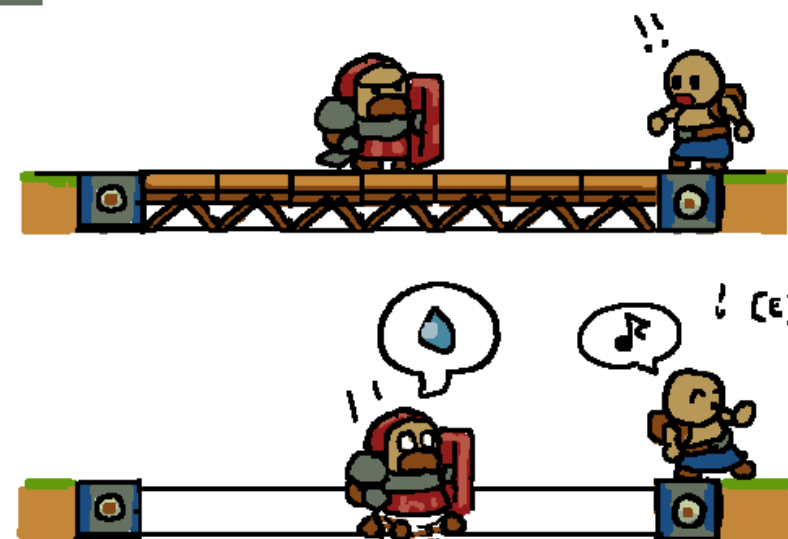
Sliding doors mean a few things need to change

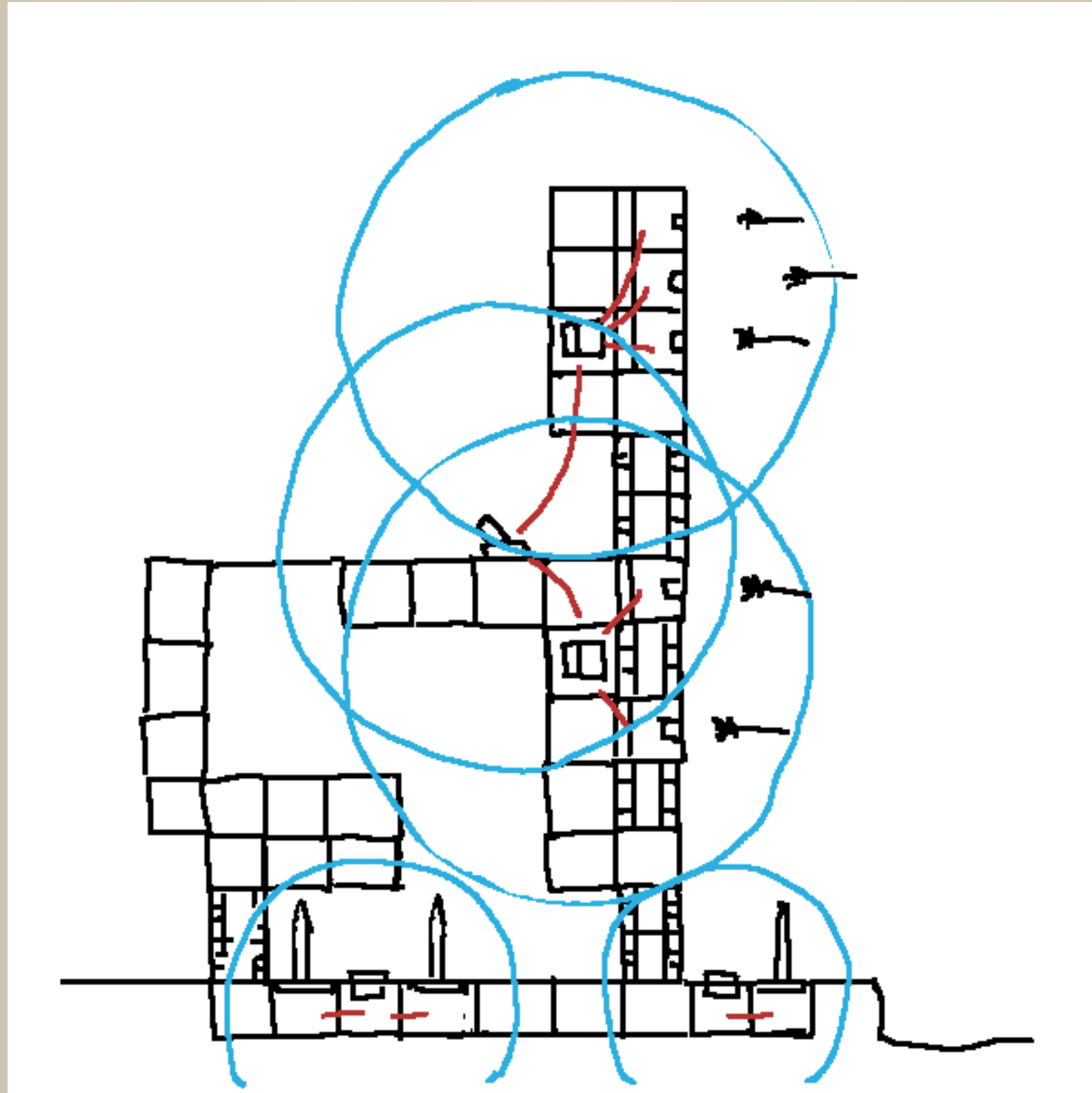
They can't be used for "firing ports" solution - make castle background tiles that are between two stone tiles ("window" tiles) block arrows with an age of >50-100ms so that you can only fire "out" not in.

Building them would require a "winch" block This makes building them more complicated, however the same winch block could be used for all types of door - wood -> steel and in a way this is good, because the mechanism of the door can be targetted (more tactics).

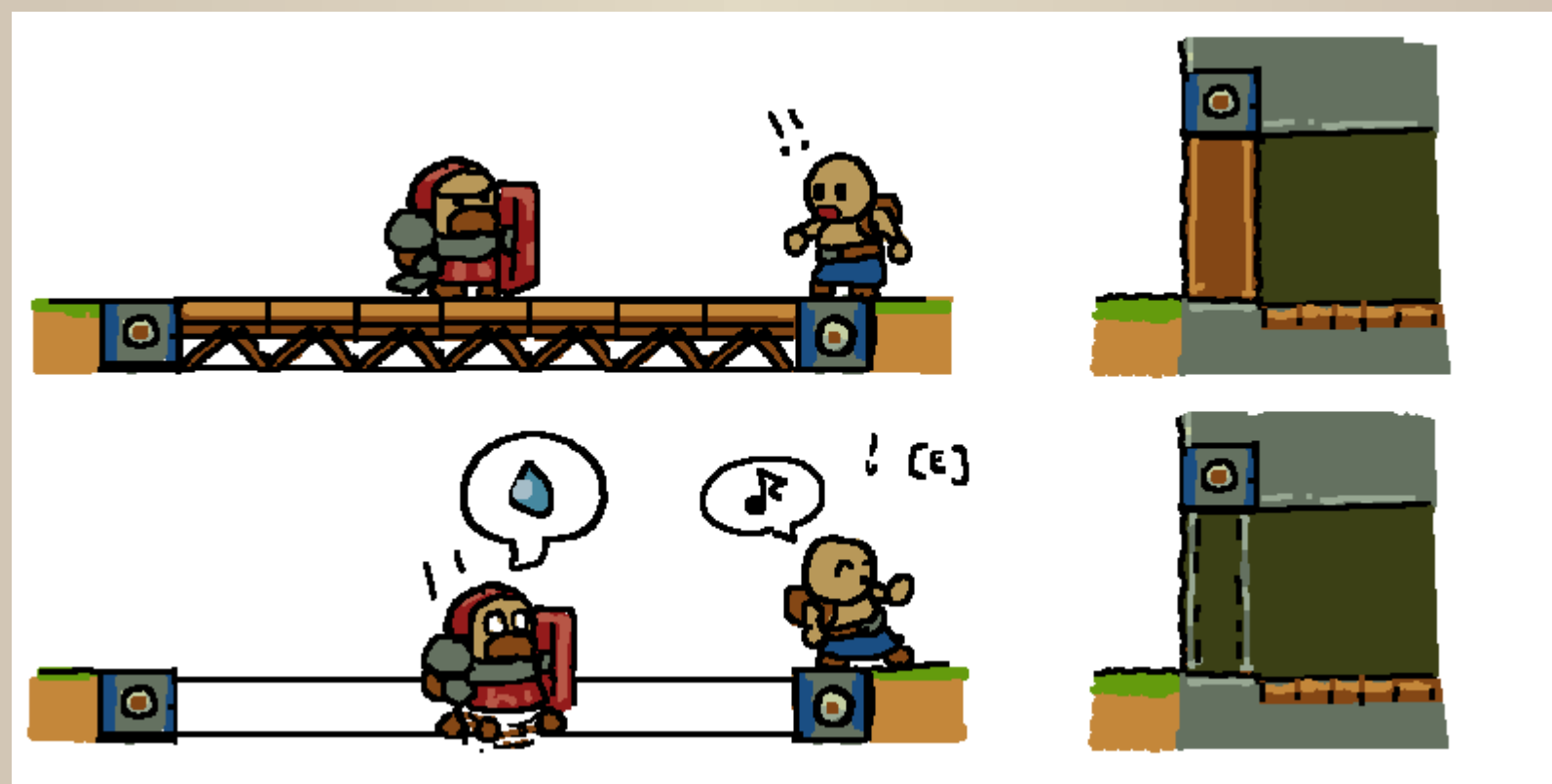
They don't work horizontally out-of-the-box because winch tiles selecting in all directions could lead to some... interesting behaviour.

Possible solution: drawbridges could be used.





Mechanisms radius of control and wires connecting



Winches

# MAP OBJECT

## GENERIC

BAN BUILDING



AREA OF EFFECT



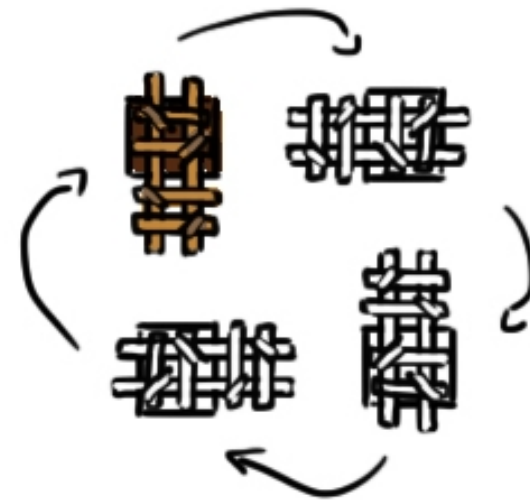
REQ. SUPP.



GIVE SUPP.

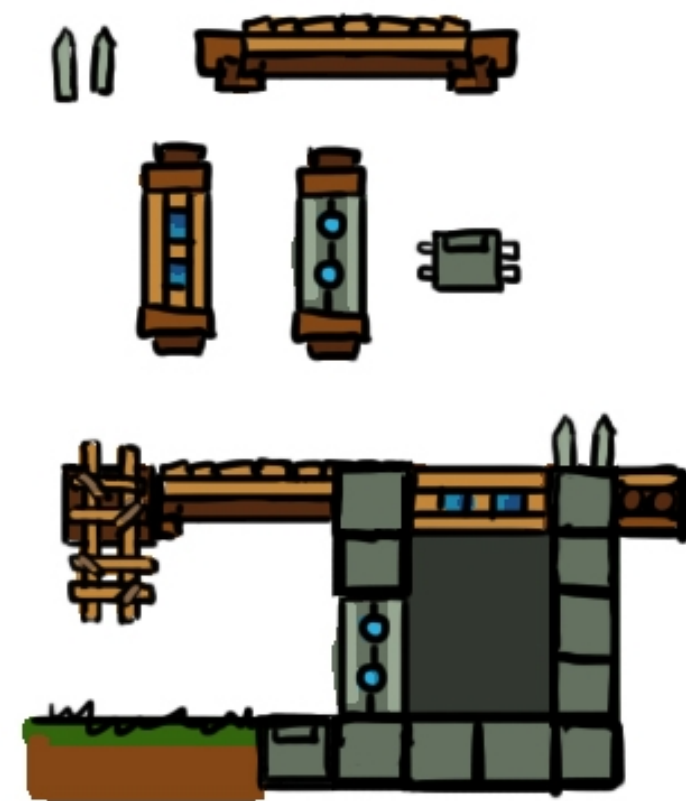
see [dropbox/kag/code/mapobjects](https://www.dropbox.com/kag/code/mapobjects)

rotate by 90°

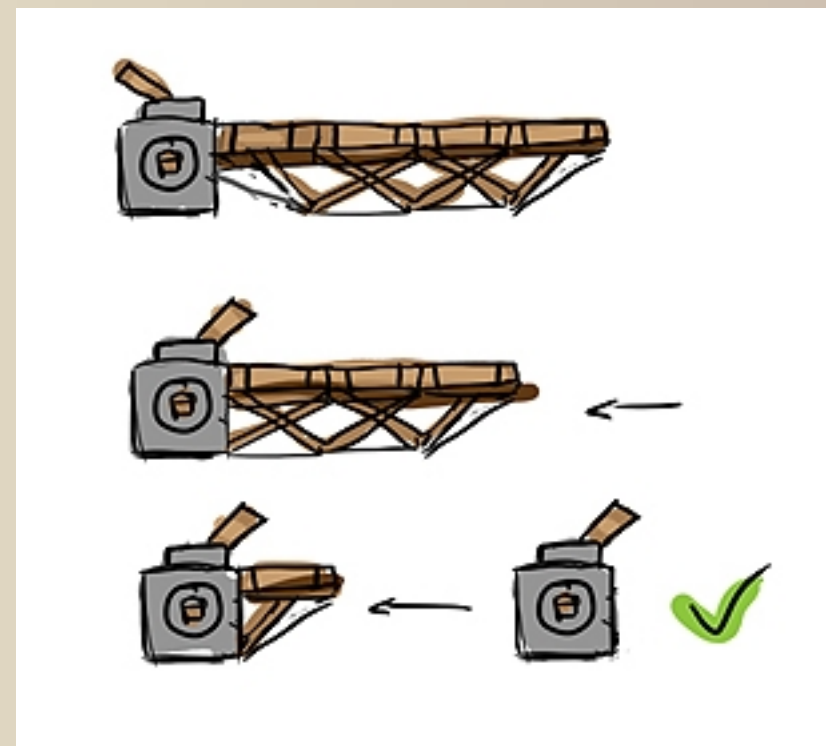


important for slopes

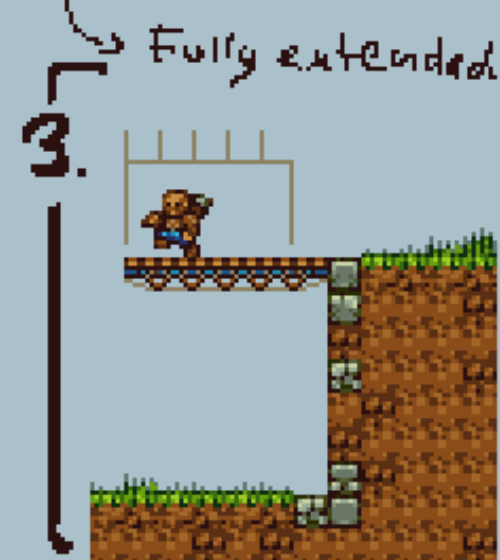
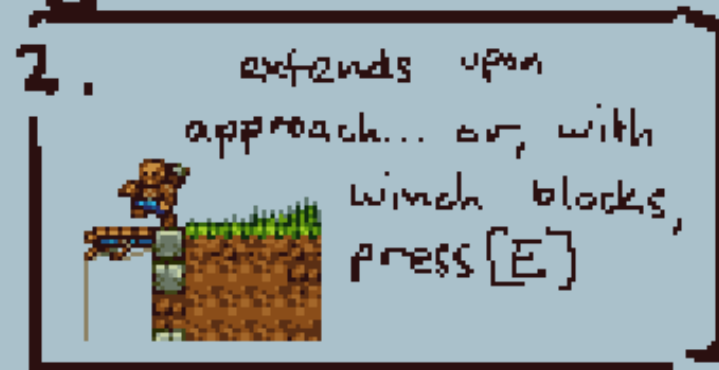
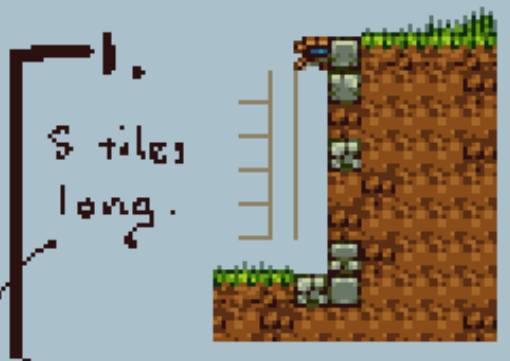
but adds versatility anyway.



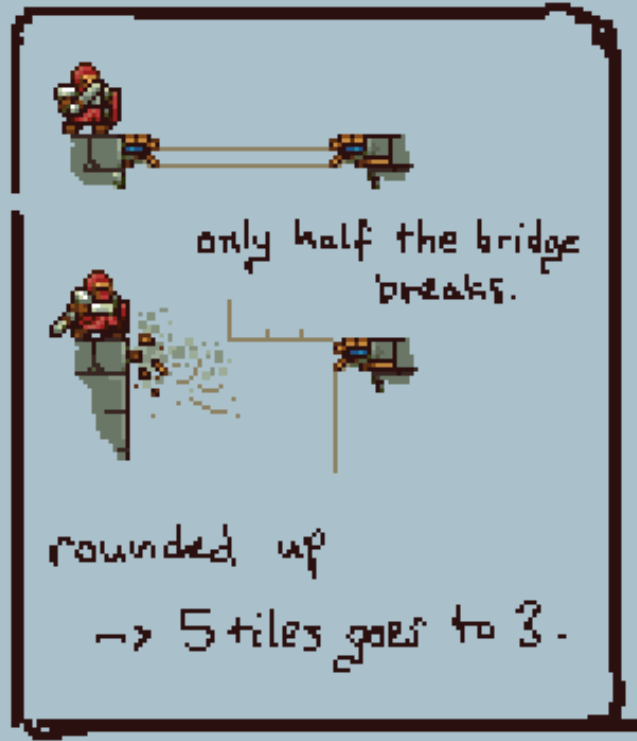




# BRIDGE.



## destruction.





Various ideas including: zombie fortress with mechanism & capture the princess mode.

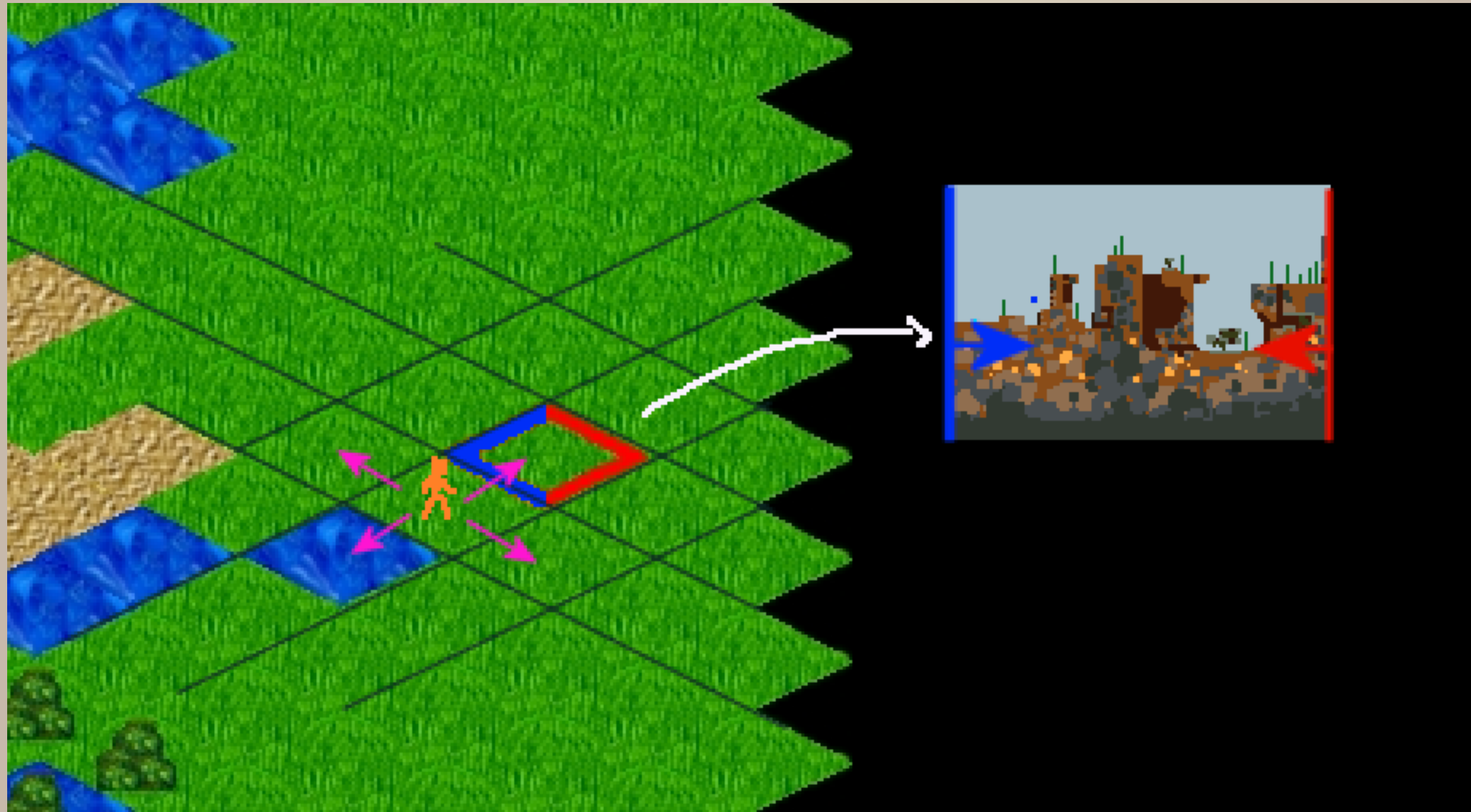


An automatic arrow launcher using connectors.

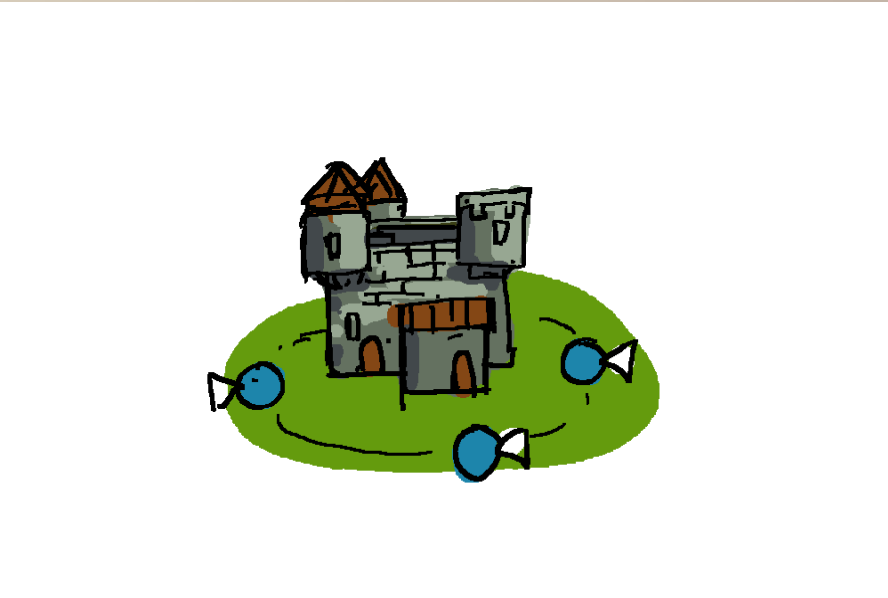
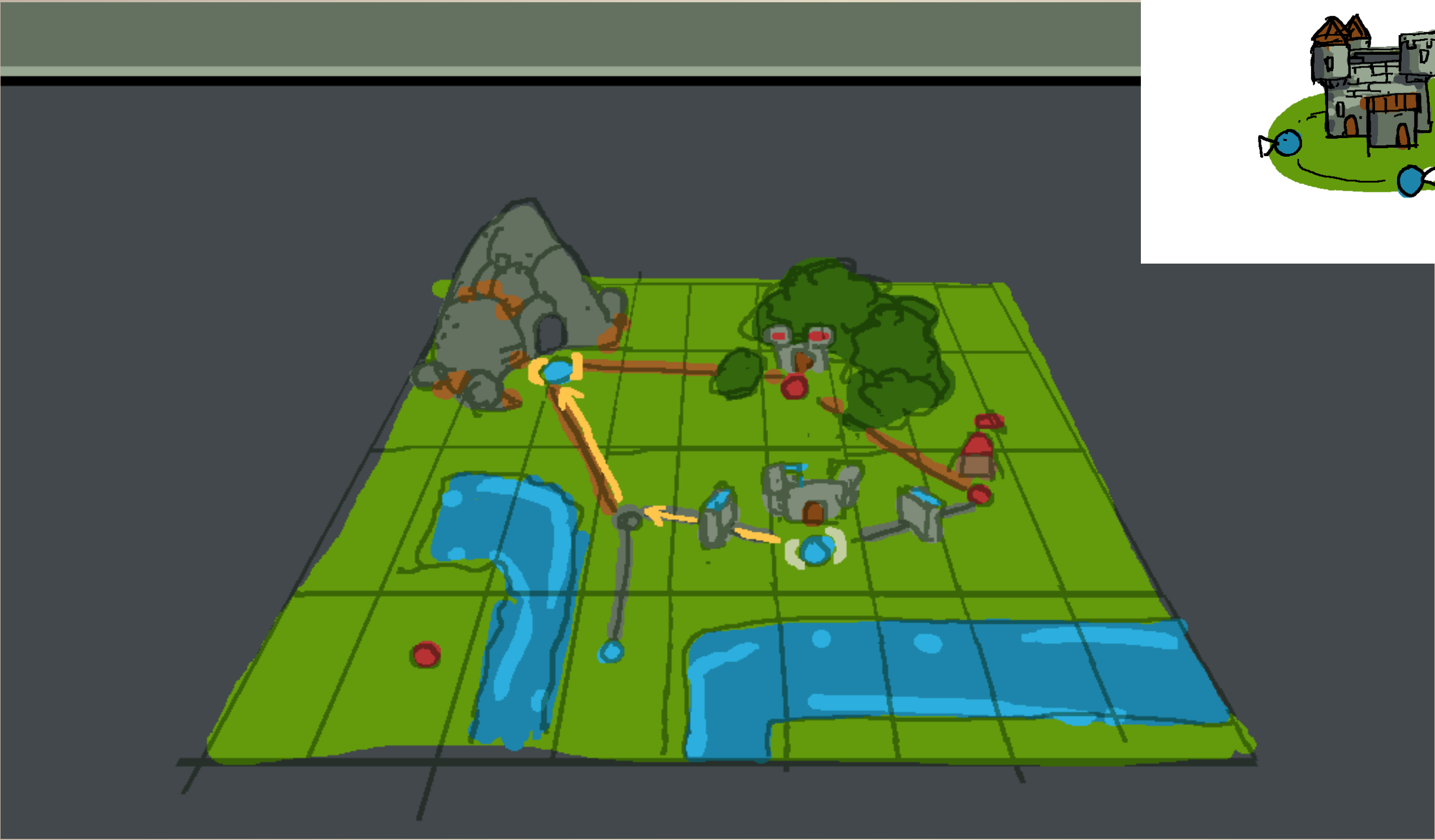


# Overworld





Entering a combat map from an isometric overworld





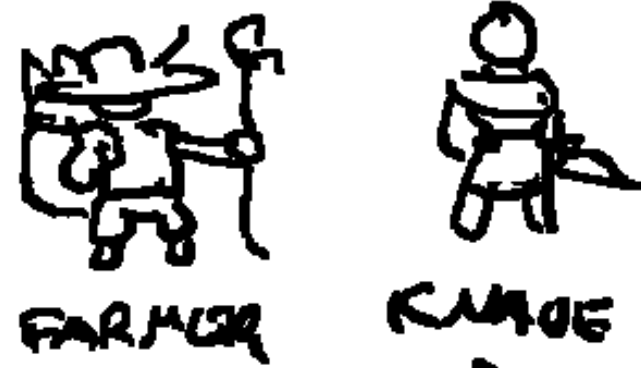


Biomes

PLAYERS PARTY



ONMAP BOTS



RECRUITABLE!

100 coin.

SOME OTHER  
PLAYERS PARTY



# PARTY

GET!



GULLOER

LAY OFF

HENRY



KNIGHT

LAY OFF

EMPTY

RECRUIT  
MIG, PANTS  
TO YOUR  
CAUSE!

EMPTY

RECRUIT  
MIG, PANTS  
TO YOUR  
CAUSE!

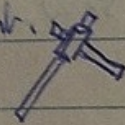
EMPTY

RECRUIT  
MIG, PANTS  
TO YOUR  
CAUSE!



# Classes

Peon / Peasant.  
♡♡



Gather (pick, axe)  
Make workbench.  
Farm (mattock)

Carpenter  
♡♡♡



Process wood  
Build workshops/beds  
Build wood blocks

Mason  
♡♡♡



Build stone blocks.  
Build mechanisms.

Archer  
♡♡♡♡



shoot arrows  
sap w/ satchel.

Thief  
♡♡



Stab to steal  
Grapple.  
Lockpick.

Knight  
♡♡♡♡♡



Knight stuff.

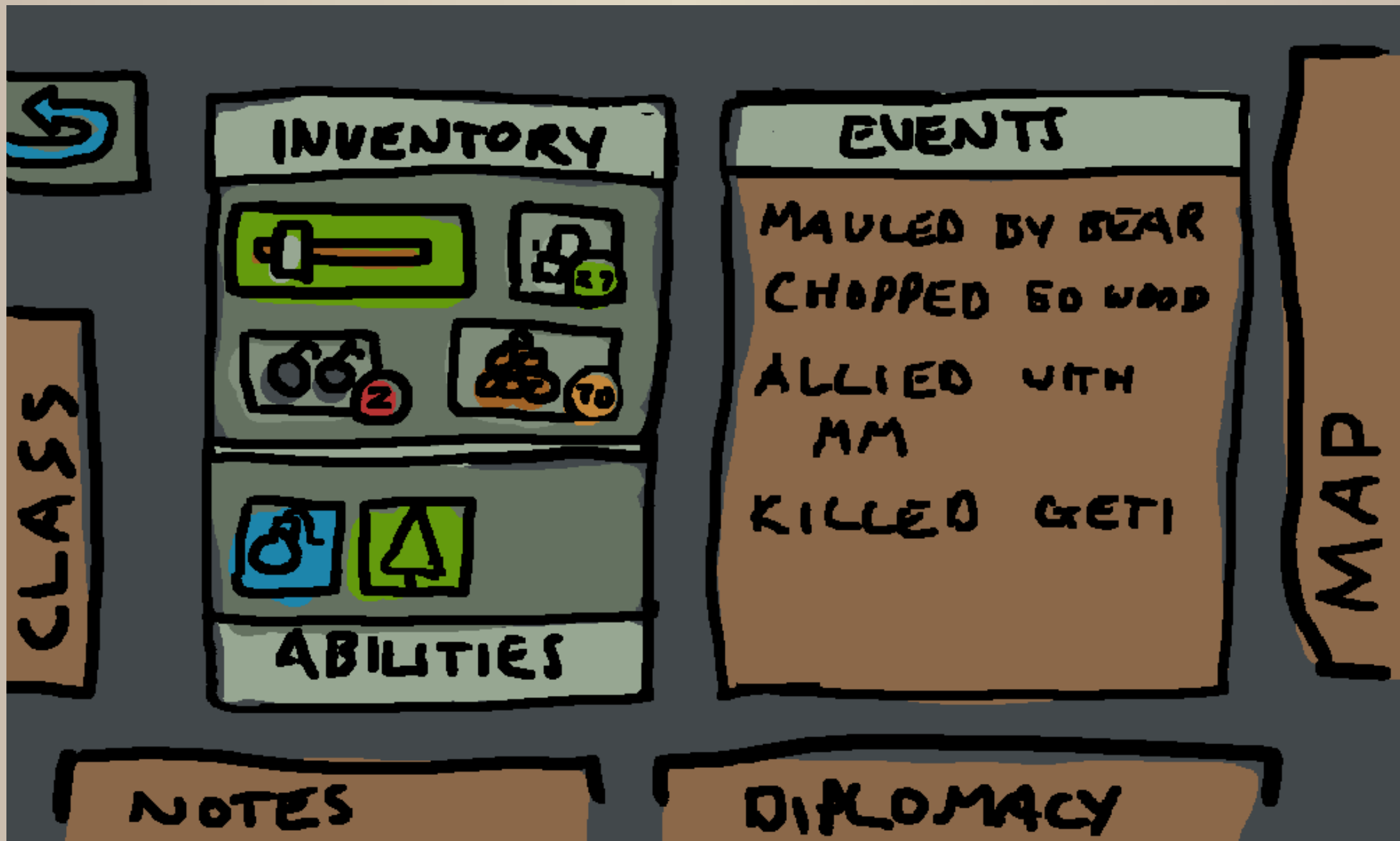
Barbarian  
♡♡♡♡♡♡



muscle wizard.

| TOTAL | STONE + GOLD + ORE<br>+ MELEE           | FOOD + ECONOMY                            | WOOD + RANGED                           |
|-------|---|---|---|
| 10    | JUGGERNAUT<br>10 0 0<br>LANCER<br>6 2 2 | ARCHITECT<br>0 1 0<br>BLACKSMITH<br>3 5 2 | THIEF<br>0 0 10<br>SKIRMISHER<br>3 2 5  |
| 7     | KNIGHT<br>5 1 1<br>SPEARMAN<br>4 1 2    | MECHANIC<br>0 6 1<br>MASON<br>2 4 1       | MOUNTAINEER<br>0 3 4<br>RANGER<br>2 2 3 |
| 4     | CONSCRIPT<br>3 0 1<br>MINER<br>1 0 0    | COOK<br>0 2 2<br>CARPENTER<br>1 2 1       | SCOUT<br>0 2 2<br>CHOPPER<br>0 0 1      |
| 1     |   | PEASANT<br>0 1 0                          |   |

Table explaining experience points required to upgrade to next class



## A NEW USE FOR GOLD - RELIGION.

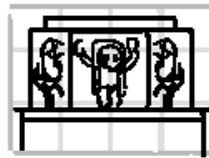
"Celt"



Shrine to Epona (4x3)

(Horse goddess)

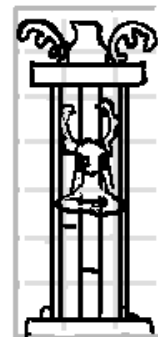
+ speed  
within radius



Pillar of Cernunnos (3x8)

(Stag God)

+ one hit kill  
within radius



Spring of Grannus (3x3)

(Healing god)

+ 1 heart per 10s  
within radius

"Christian"



Chapel (5x3)

+ extra heart  
upon spawn

Altar (3x3)

+ full health  
upon 3s wait  
inside room

Cathedral (10x7)

+ 10s Rebirth  
(dead come back to  
life where they fell)

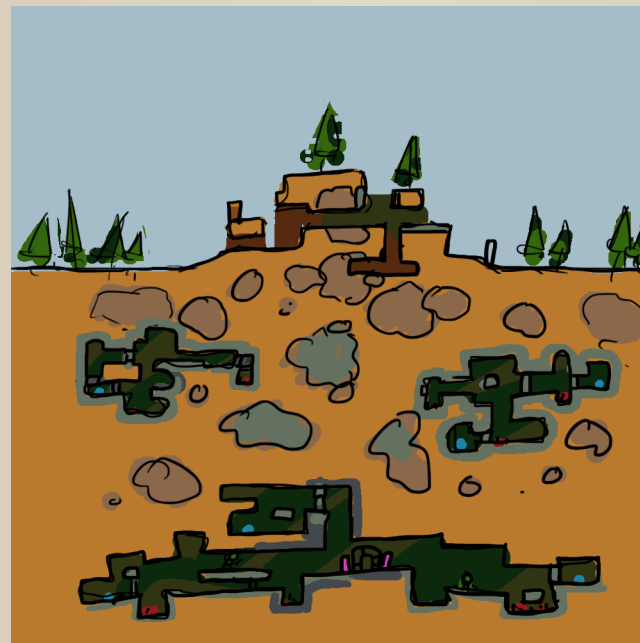


# Zombie Fortress









Zombie Fortress map layout

(MAP NOT TO SCALE)

TOP LAYER 1 OF 3 TYPES

HILL  MOUNTAIN 

PLAINS  VALLEY  GROUND.

CANYON 

BELOW THE GROUND

LAYER 3 DUNGEONS

AWAIT - CLEARING

THEM DOUBLES THE

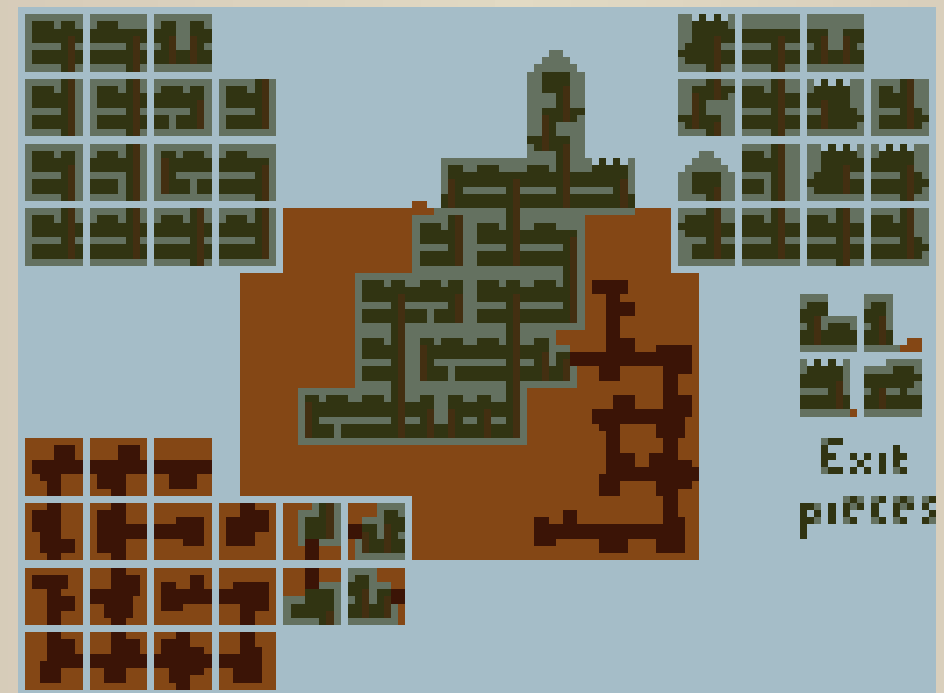
DIFFICULTY EACH TIME.

LVL I

LVL II

LVL III





A concept for using Wang tiles for  
Zombie Fortress maps generation



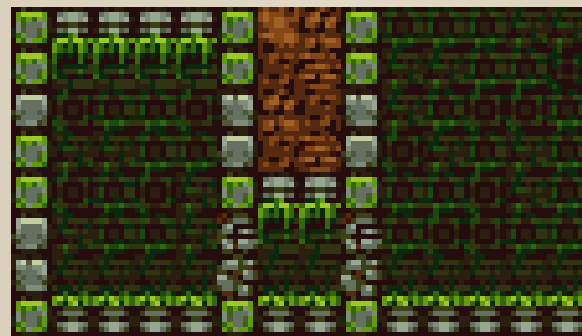
A castle generated from Wang tiles



A castle generated from Wang tiles

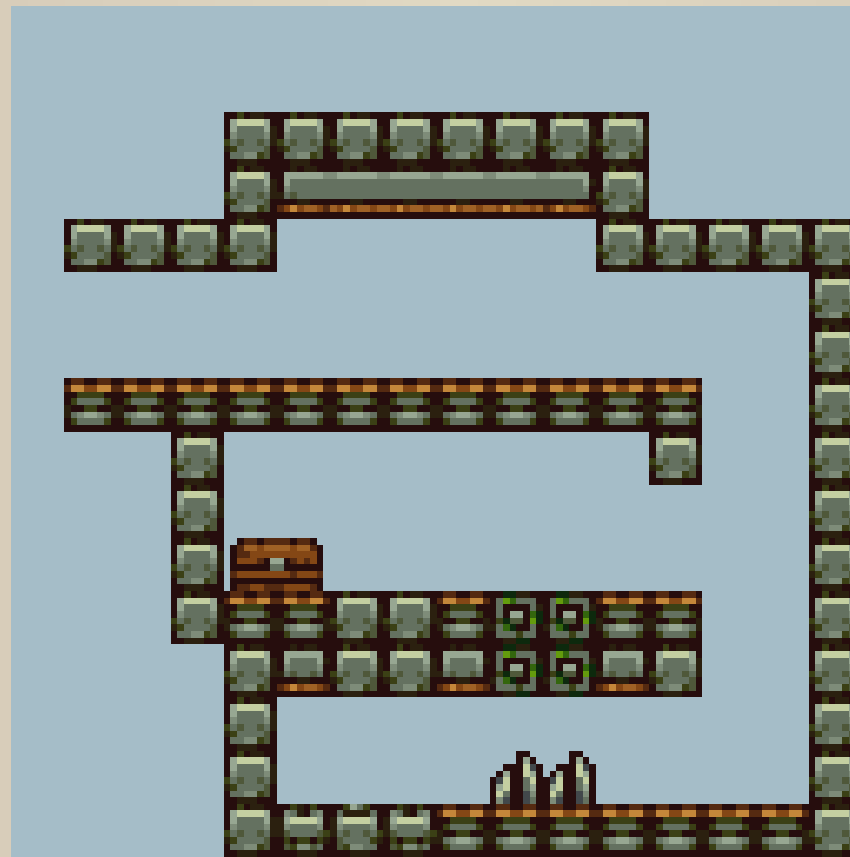


A castle generated from Wang tiles

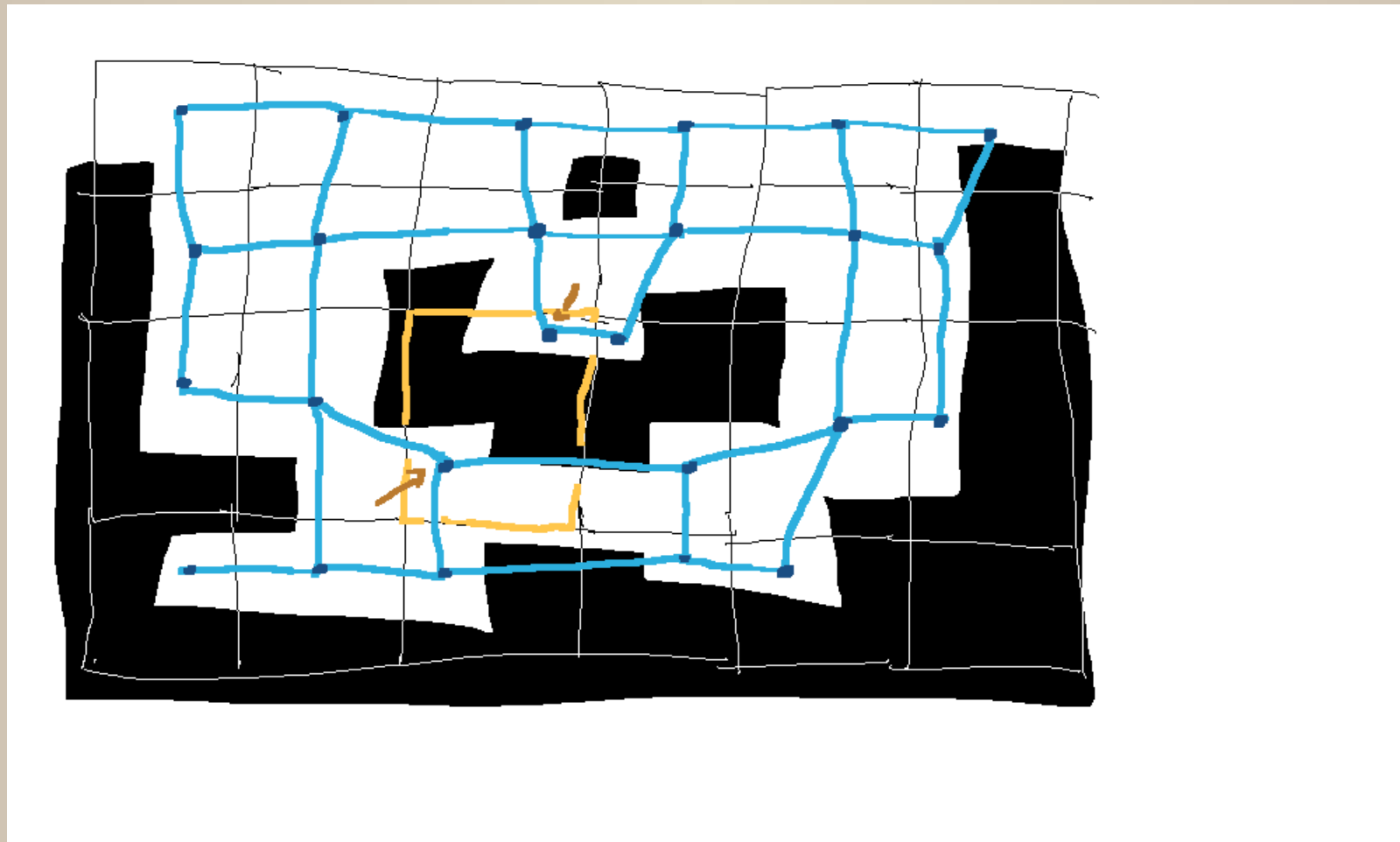


Dungeons mockup

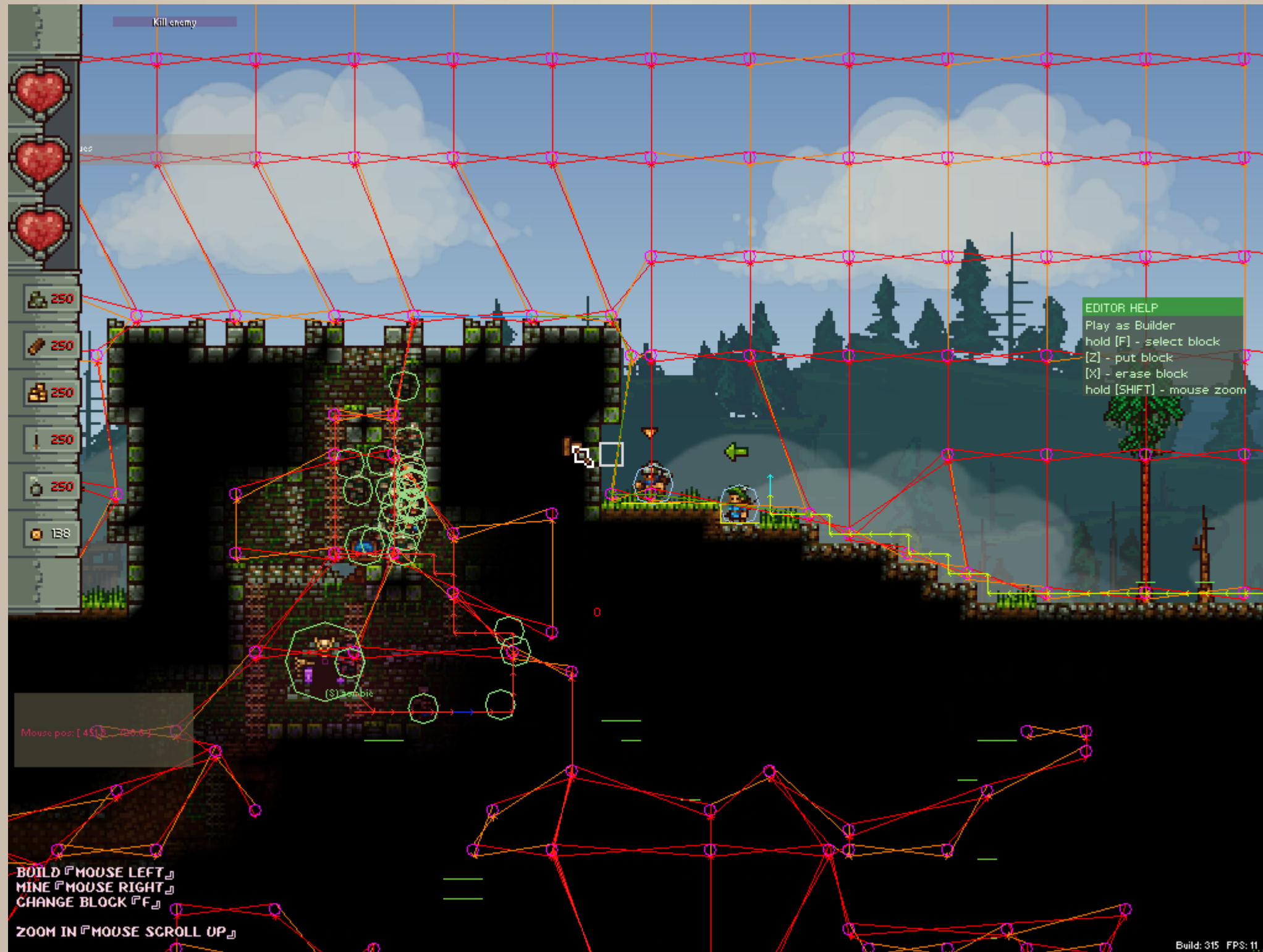




Traps and treasures in dungeons



Zombies required A\* path-finding.  
This sketch presents a high-level grid.

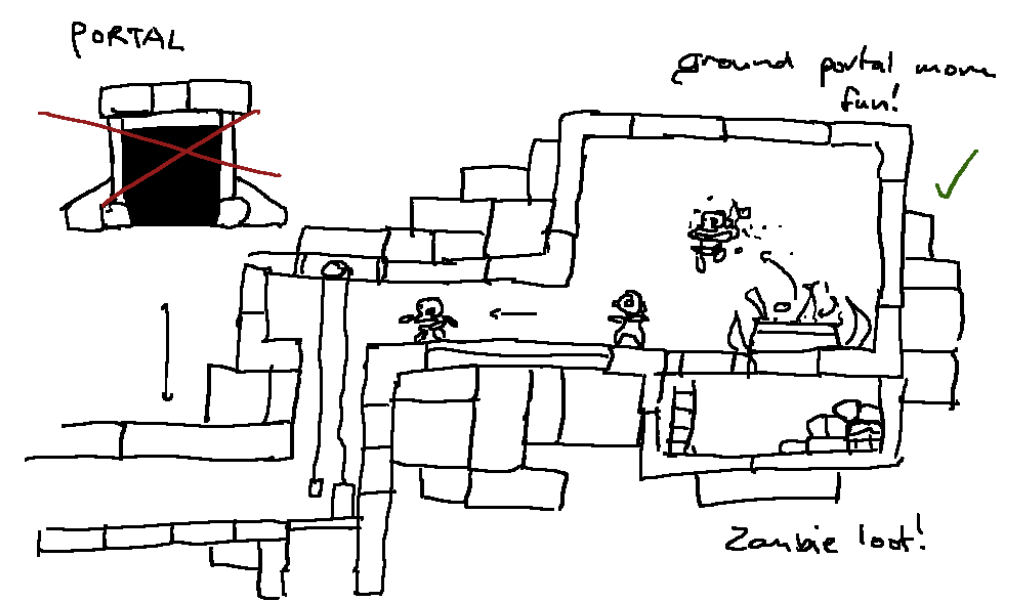


Implementation of the high level grid



Skeleladder

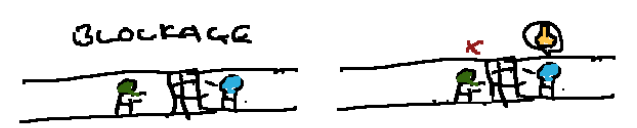




COMMON PROBLEMS



SOLVED BY MORE ZOMBIES



Solved by explosive or digging  
Zombie... But zombies block  
each other.

BETTER SOLUTION



less zeds required.

> report "blockage" when encountered  
player made one. (to director)  
clear path for other zombies,  
wait for breach.





The entire cast of *Zombie Fortress*

# 'WAR' & THE BETA





# BUILDING IDEAS

troops in from side by default,  
-> need to build tents, halls  
and outposts

RADICAL IDEA - BY DEFAULT GAME MODE ONLY  
SPAWN AS BUILDER AT START OF GAME  
-> PROGRESS TO MILITARY STRUCTURES  
THROUGH BUILDING -> MORE RTS

People walking in from side  
are only builders w/ 2HP  
-> must build a castle to  
"upgrade"

Flag is on ground  
at start -> have  
to hide it

gold, stone and  
ore from mines

note: window = fortification,  
only new arrows can pass through,  
not old ones -> safe to shoot from

castle made up of ROOMS

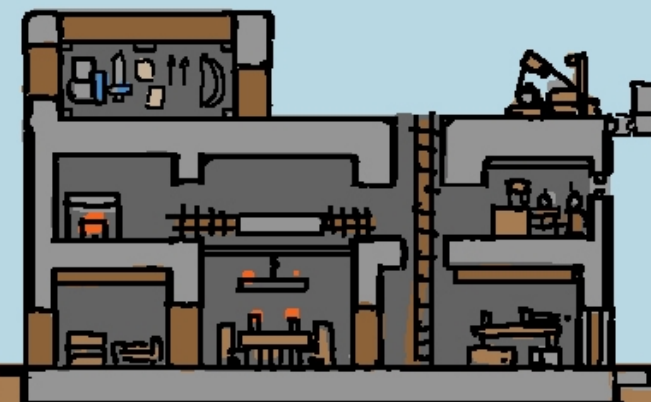
Barracks (change class -> military)

SMITHY (+metal)

ARMOURY (bombs/arrows)

QUARTERS (HP)

HALL (spawn) seige workshop (seige)



This should lead to much more cohesive team play - not only can grievers not do much at the start, they can't even spawn as military inside a properly built castle unless people put a tent on the roof, and would have to get explosives from the armoury anyway.

By making everything upgrade-able you also get more of a sense of progress through the game -not only is there an epic castle built by your team but it actually does a bunch of stuff.

I think a metal economy would also be a good idea, for upgrades + seige building. The roads would make infrastructure more important, getting from the castle to the front line would be nice and quick, and you could have fun undermining the enemy routes.

tent allows changing of class + spawning but doesn't provide bombs or extra hp. Spawning at a tent keeps your last class choice (die as knight -> spawn as knight)

roads = 1.2x walk speed

grass = 0.8x walk speed

Hall = +1 heart on spawn -> castle dwellers are stronger than "conscripts" in the field

HOWEVER CAN ONLY SPAWN AS BLD

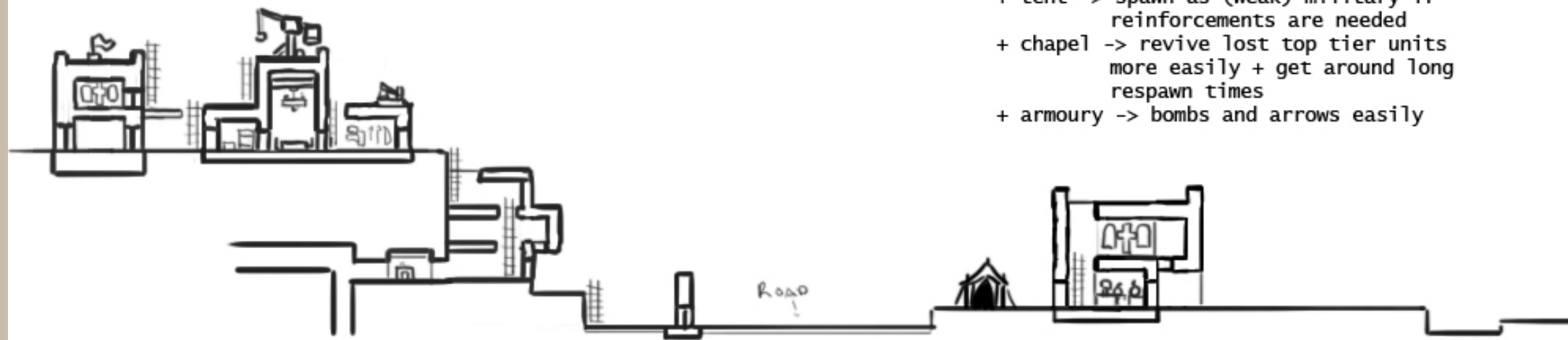
-> NEED BARRACKS for military in a castle

castle spawned folk probably have nicer clothes too -> epic knights w/ 4HP

#### Main fortress

- siege engines for defense if needed
  - trebuchet -> prevents enemy building nearby fort
  - catapult -> prevents enemy building skybridges
- great hall -> all classes available
- quarters -> healing if needed
- barracks -> militants can change class on their way out
- flag tower
  - chapel -> reviving early game (vs critters or falling)
  - defends flag separately to spawn

chapel - brings back units from the dead - only useful if there's a long respawn time, but I think there should be in the RTS version to make kills matter a lot more. ~30-60 seconds.



#### forwards base - front line

- + tent -> spawn as (weak) military if reinforcements are needed
- + chapel -> revive lost top tier units more easily + get around long respawn times
- + armoury -> bombs and arrows easily

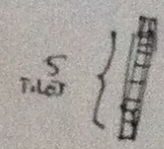
#### mines

- smithy -> quick smelting of ore -> steel
- under base -> harder to attack

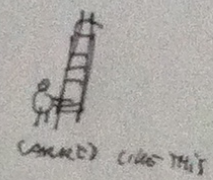


First sprites for the ideas that were to become the WAR gamemode

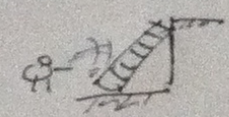




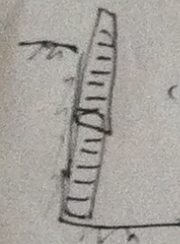
S TOWER



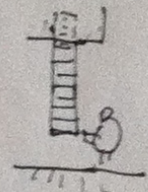
CANNOT CLIMB THIS



CAN BE TOSSED

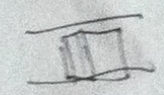


CAN BE COMBINED  
CAUSE LADDERS CAN STAY  
ON LADDERS

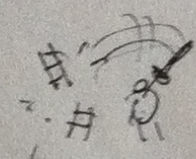


IT DRIPPED  
WHILE CALLED  
IT JUST STICKS THERE

DOORS

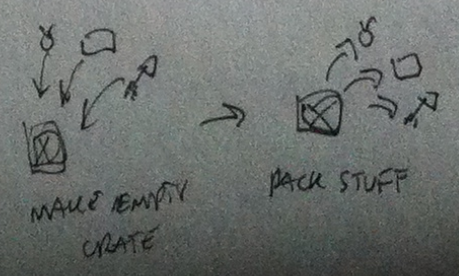
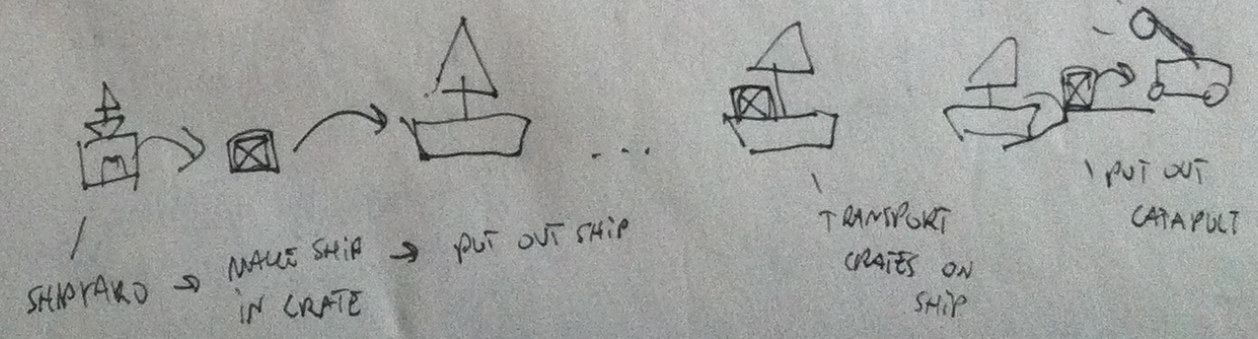


TEAM SMILE BOYS

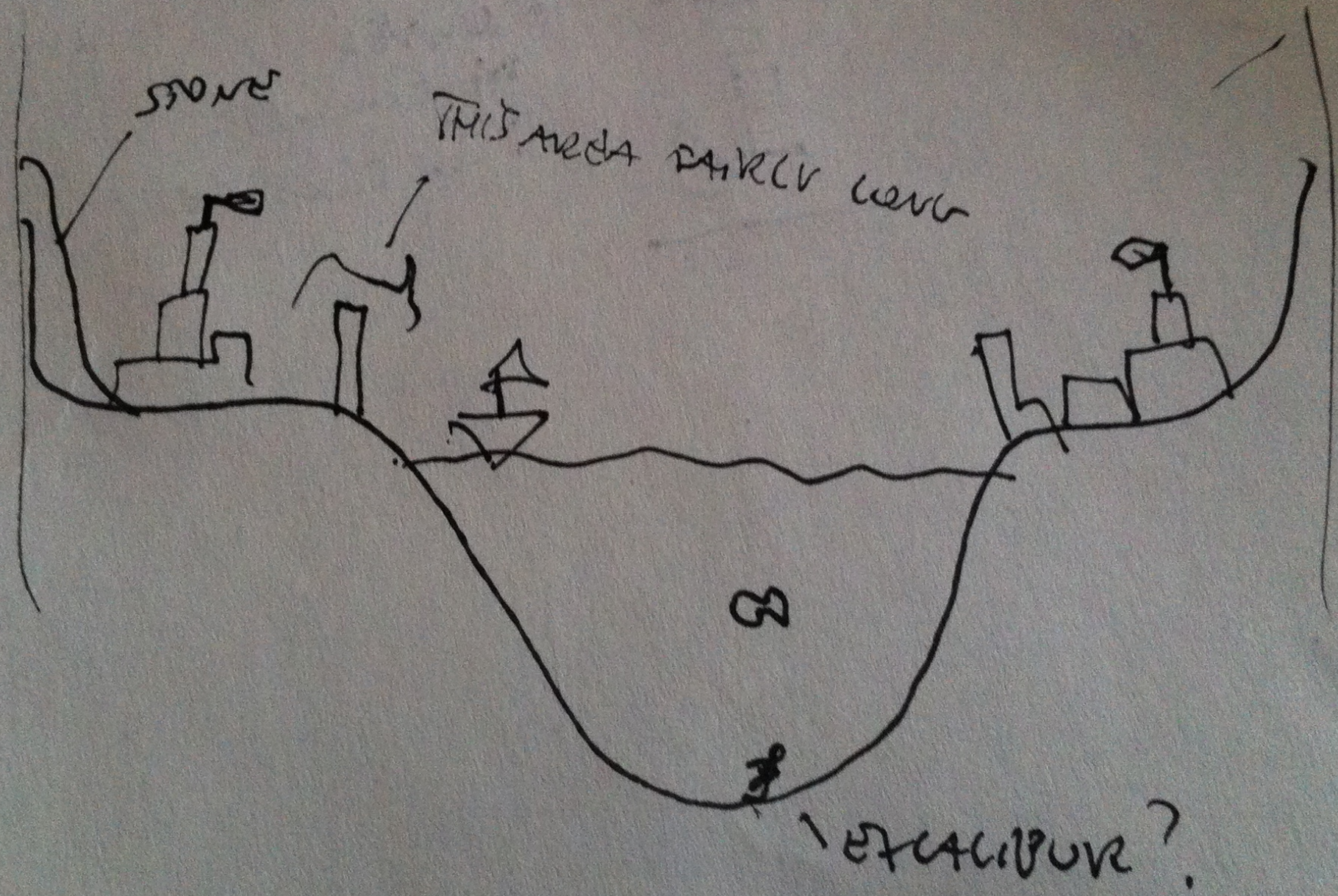


EASILY DESTRUCTIBLE

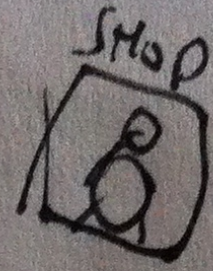
ALL OF THINGS ARE CONSTRUCTED  
IN CRATES











A GUY THAT  
ACTUALLY  
WORKS  
THERE

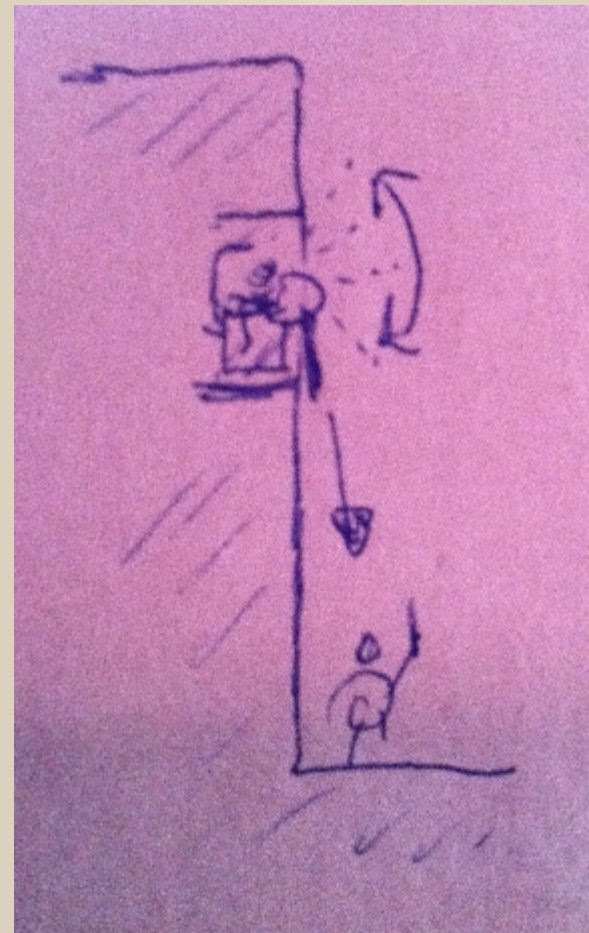
I  
KOV DAK HIM



HE COMES TO WORK  
FROM BASE  
TO SHOP

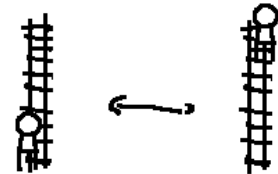
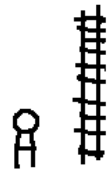
IF KILLED NOW ONE  
COMES OUT  
(TAKES TRUST)



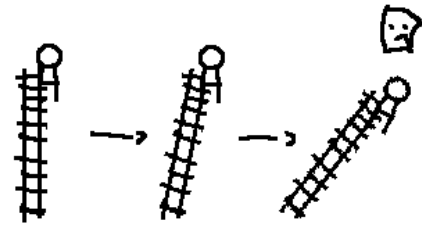


Mounted bow design

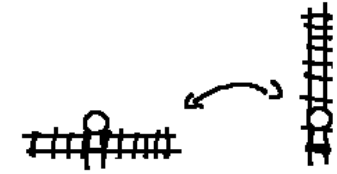
# LADDERS.



climb like normal.



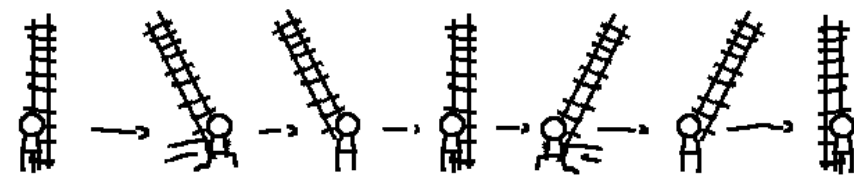
lean if not "on" the centre line of the ladder. (higher = faster lean)



swap between "up" and "down" with [LMB]



WALKING INTO WALLS SLIDES THE ACTOR ALONG.



movement puts a torque on the ladder, so it rotates.

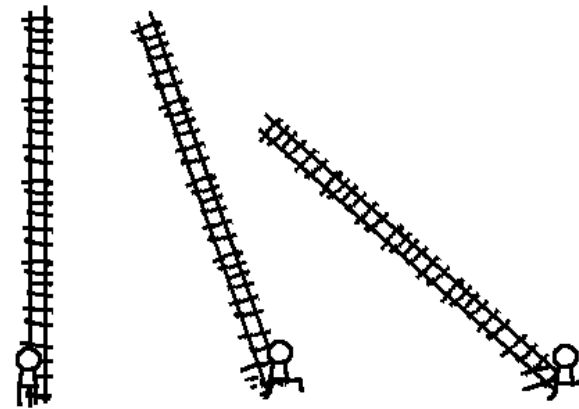
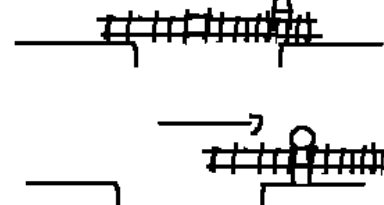
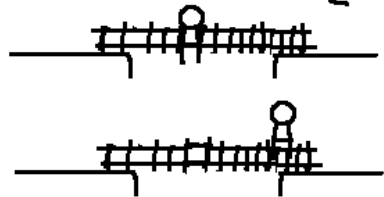
Longer ladder = slower recovering = larger angle.



pickup/drop with [E]

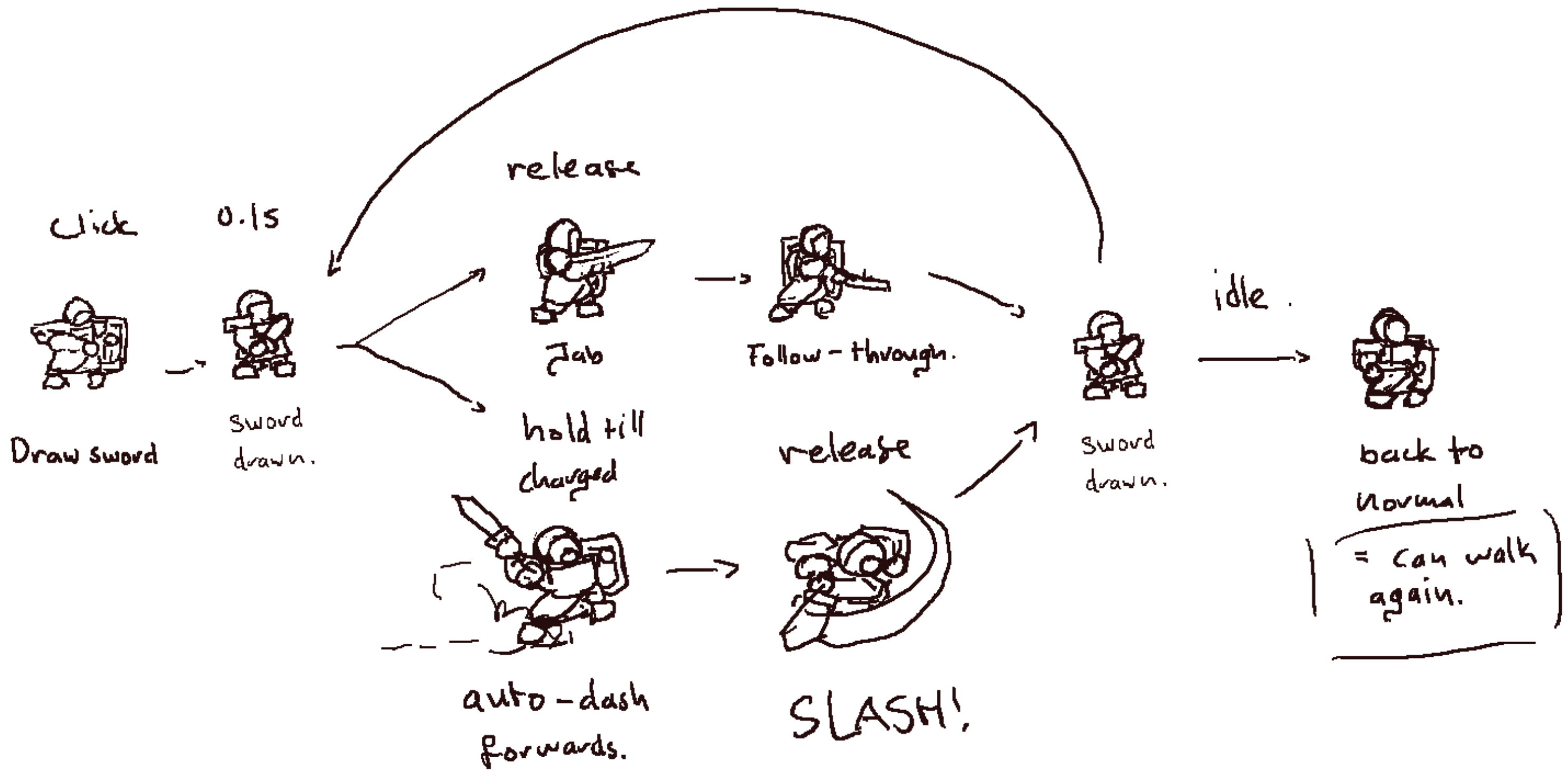


AUTO-DROP HERE (actor supported only by this ladder)



LADDERS DO NOT COLLIDE WITH EACH OTHER.





The new knight combat in the beta version

### Start Island

- low mats (wood)
- large space
- > FARM.

### Colony island

- boat not req.
- more mats
- build shipyard.

### WAR Island

- large
- many mats
- point of contention

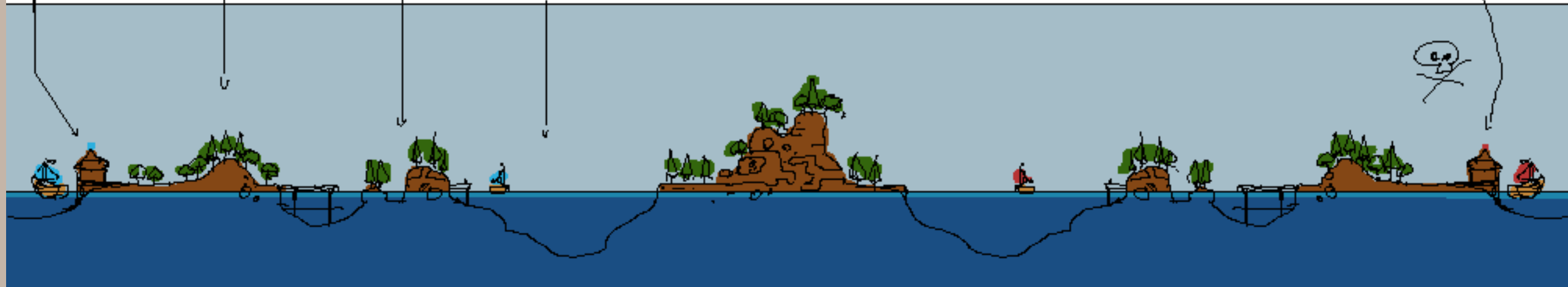
### GAME FLOW.

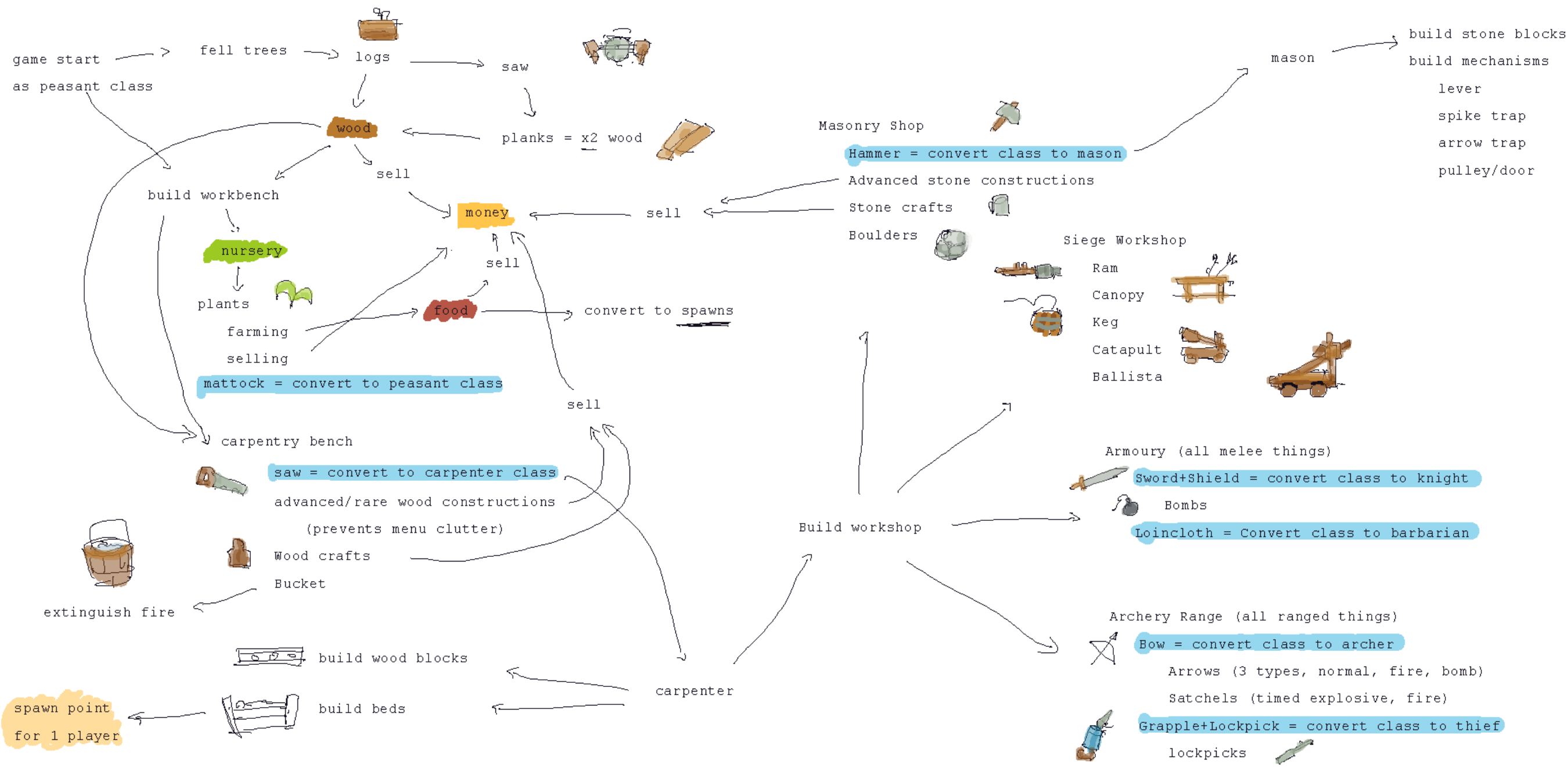
1. clear + farm + feed.
2. amass army
3. fight
4. win! (DESTROY DOCK!)

### DOCK

- start spawn
- only builder
- buy/sell items

boats needed for  
crossing sea





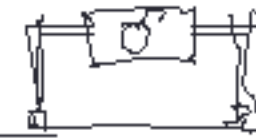
get upgrade building crate  
from here - cost 100 wood/stone



take it to where you want the building  
(ideally near material production site)



unpacks into frame  
with icon of what you  
get if you contribute



buildings

|              |                        |
|--------------|------------------------|
| tunnel       | travel                 |
| munitions    | bombs, explosives, etc |
| siege        | cata, ballista         |
| shipright    | longboat               |
| architecture | stone blocks + traps   |



pile of mats grows  
= exciting, please pile more wood  
here for goodies



completed building  
provides facilities  
IF RUSSIAN PRESENT

The initial design of WAR gamemode had a preconstructed Hall building



## The Hall

It was eventually dropped from the game because players felt a preconstructed building didn't allow for much building freedom

SIEGE!

RAM!



CANOPY!



RAM TEAM!!!  
GONNA WRECK UP A CASTLE!



"CARRY" FRAME HAS LOTS OF USES:



DRAG CORPSE!

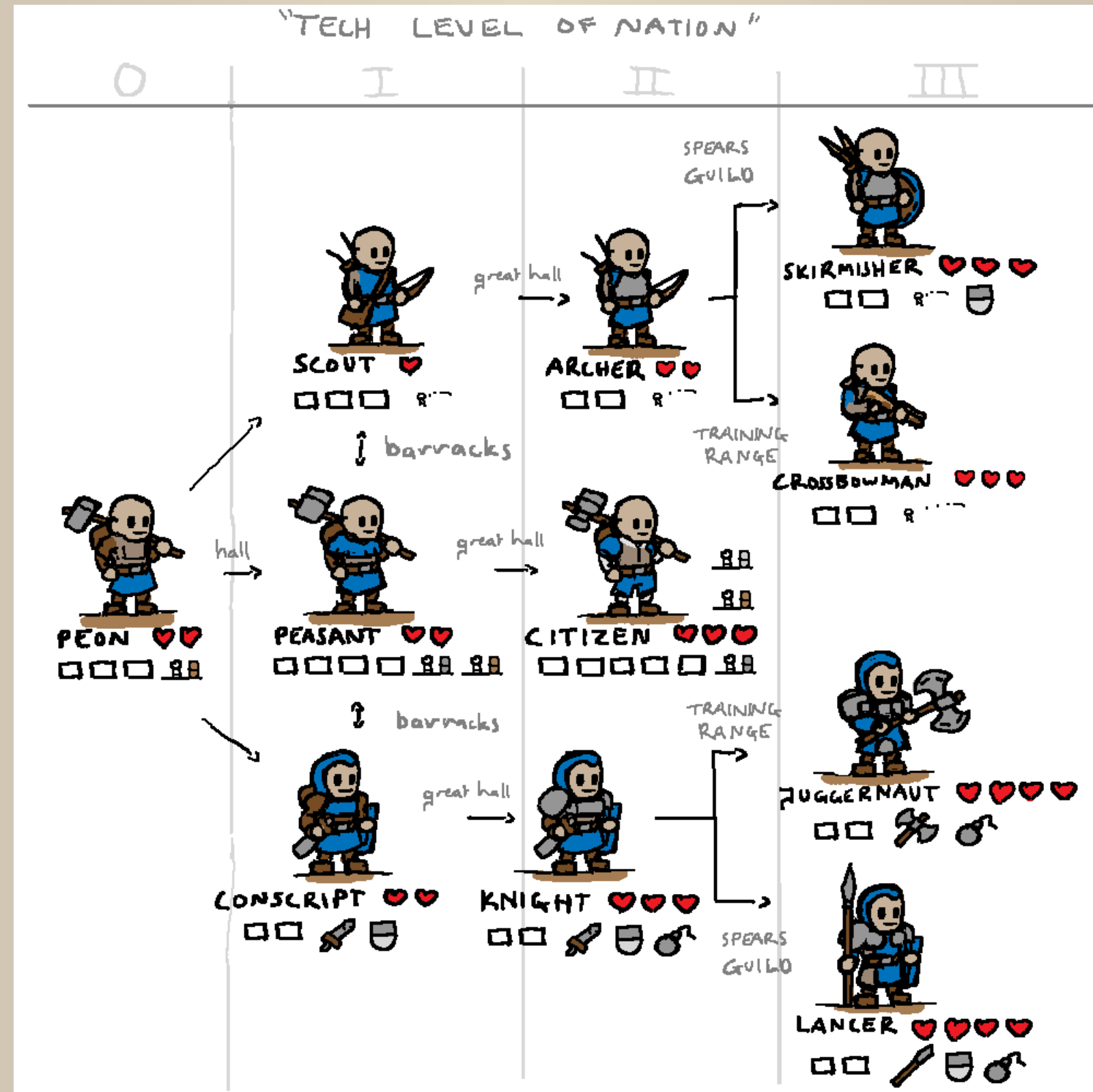


CARRY POWDER  
KEG -> DEMOLISH!

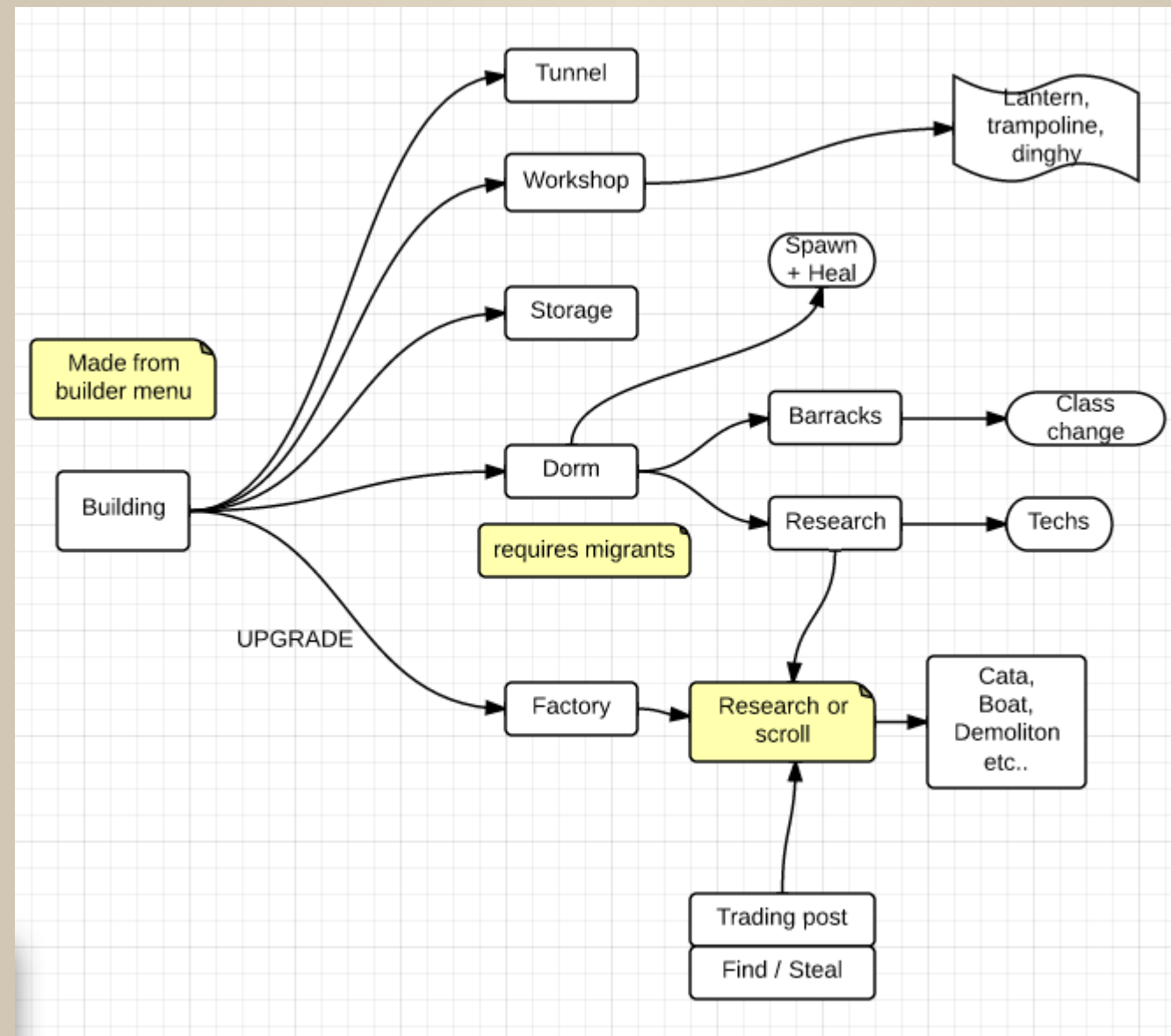


TEASE BISON!  
(JUST KIDDING)

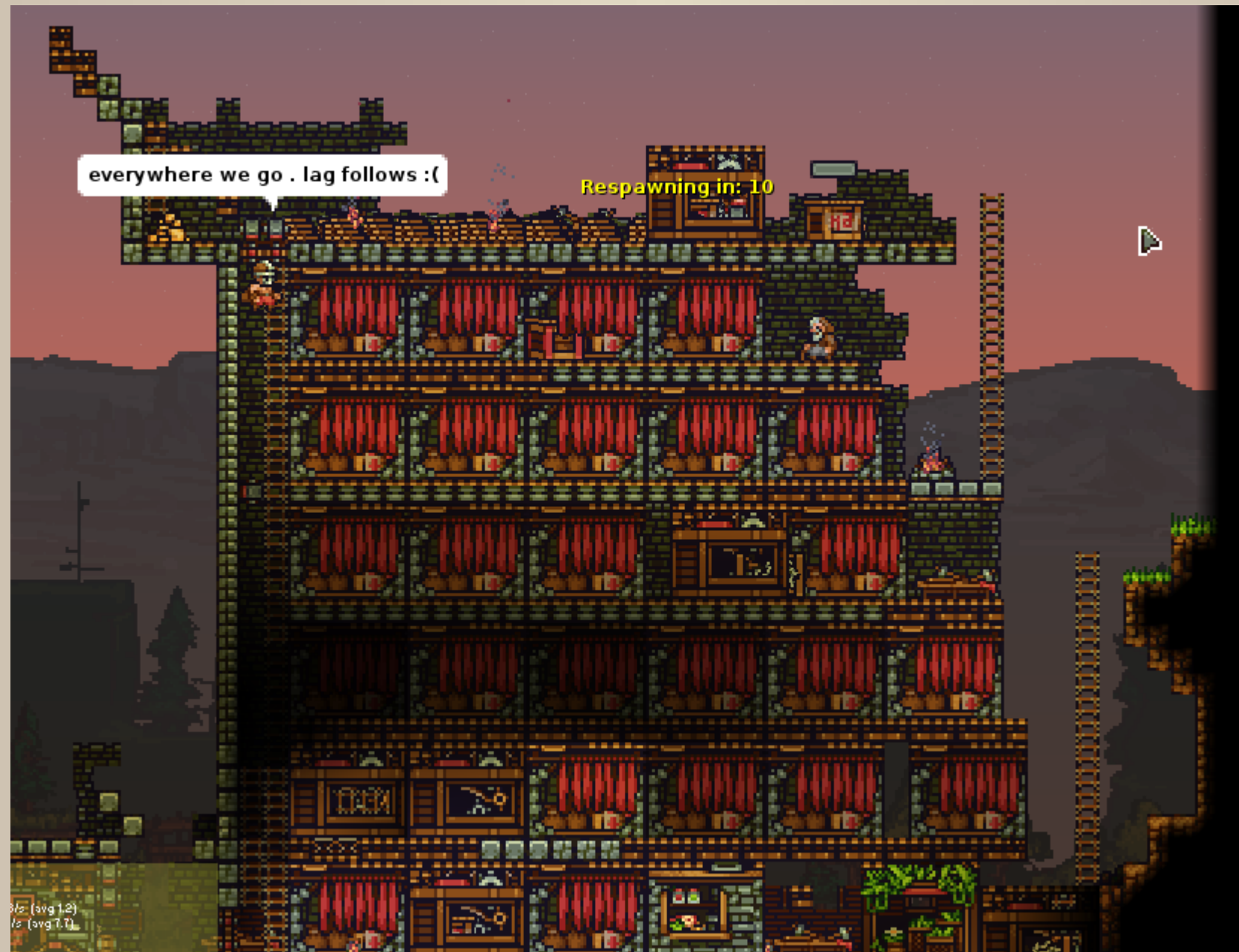




Class upgrades



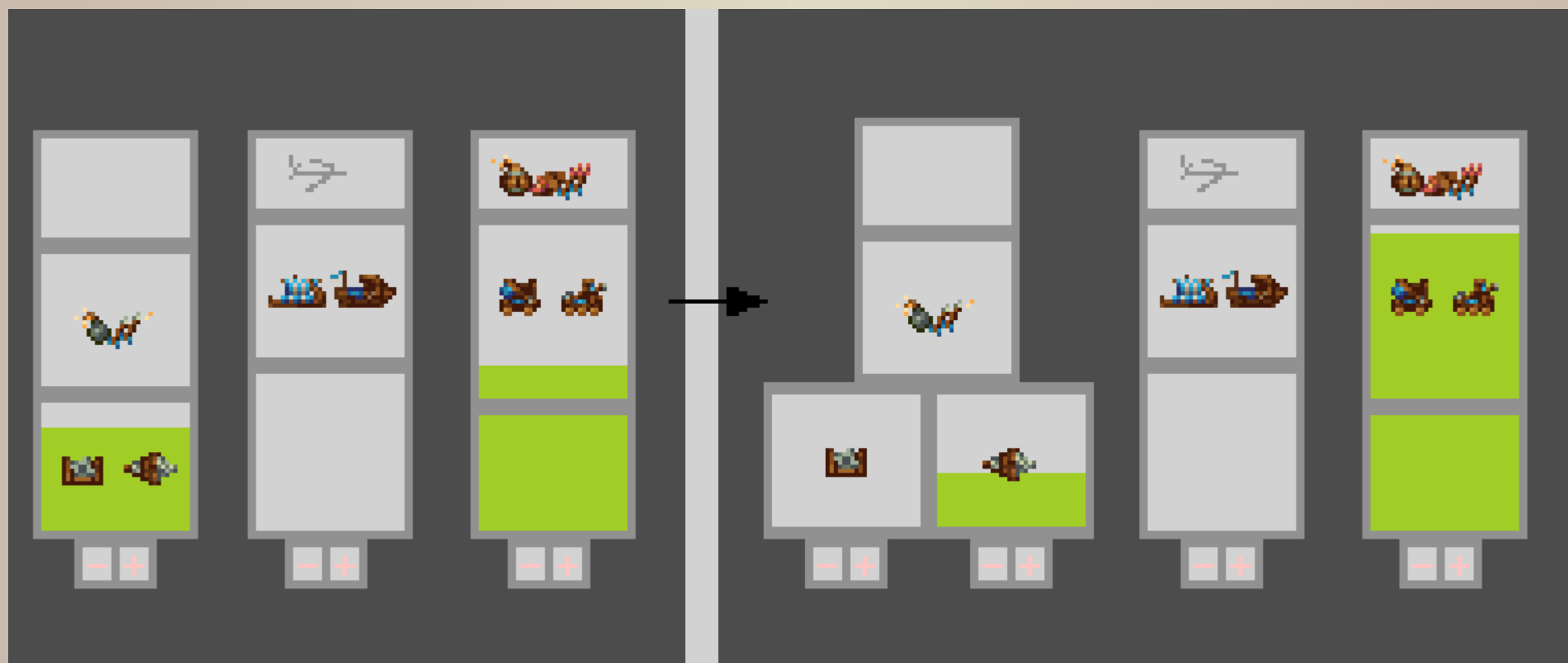
One of the many game design overhauls after the silent beta. This design lead to the so called "migrant hotels".



The infamous "migrant hotels"

# Tech trees





# TECH TREE

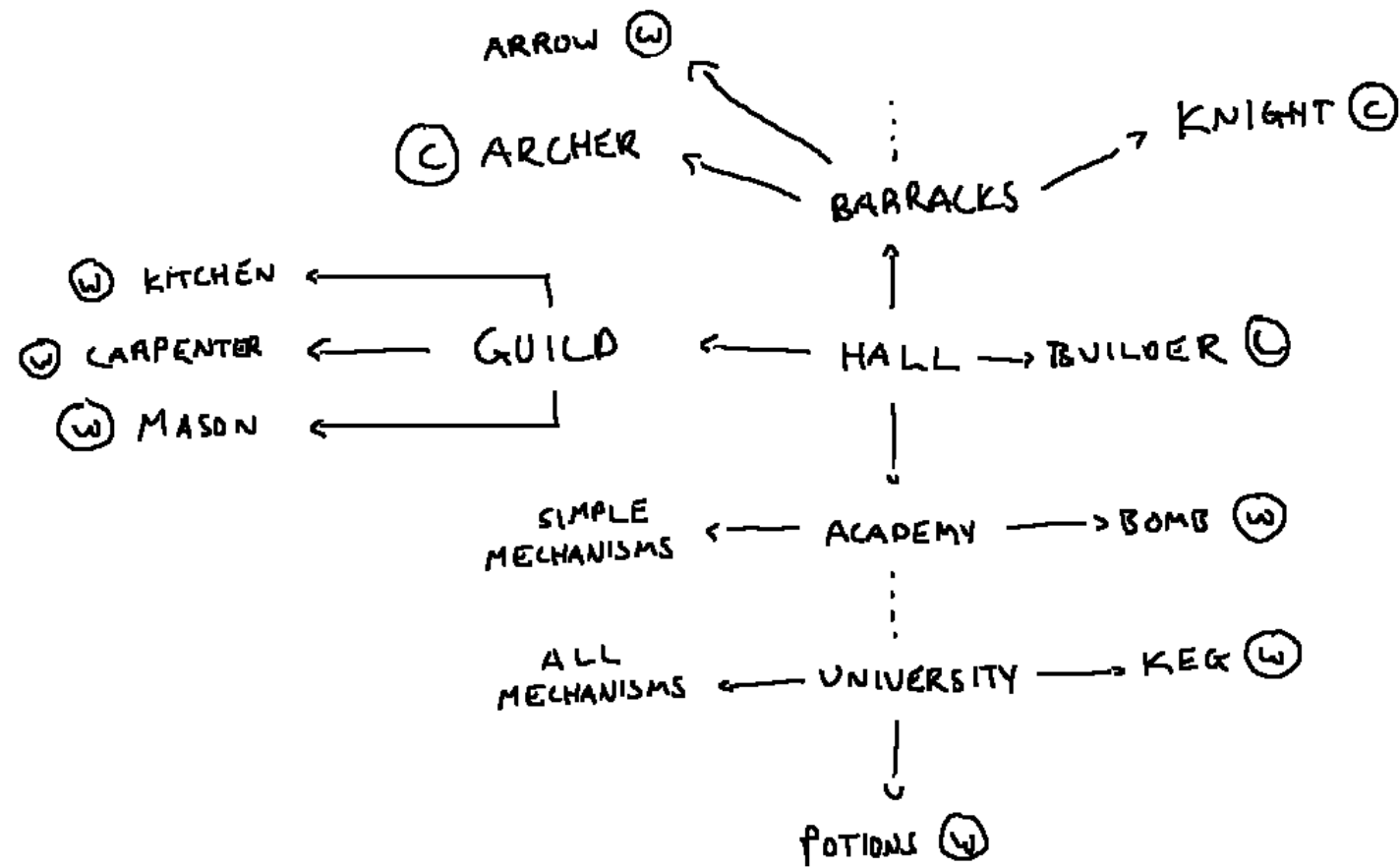
## KEY

- > UNLOCKS
- ..... UPGRADE
- PAY TO UNLK.

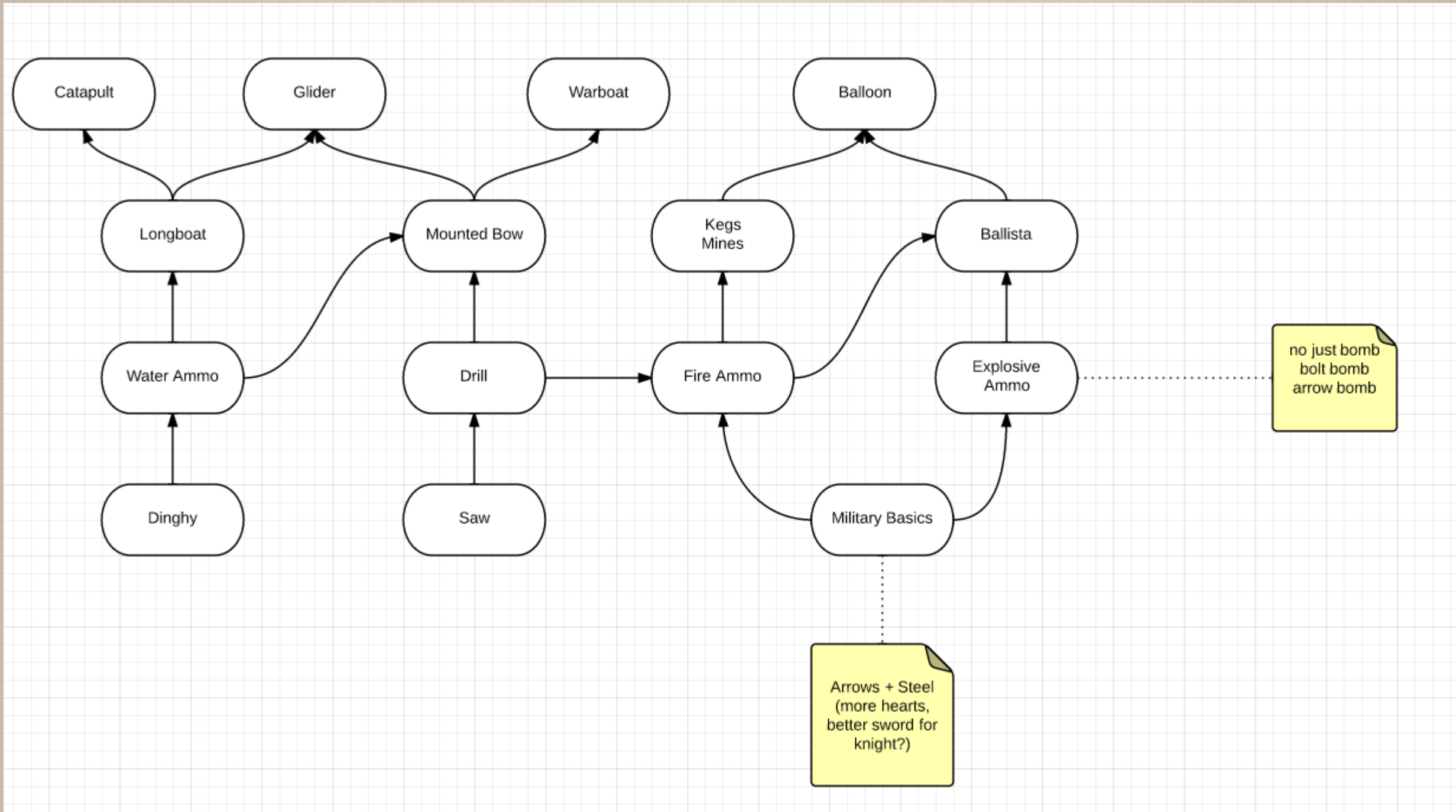
Ⓜ IS W-SHOP

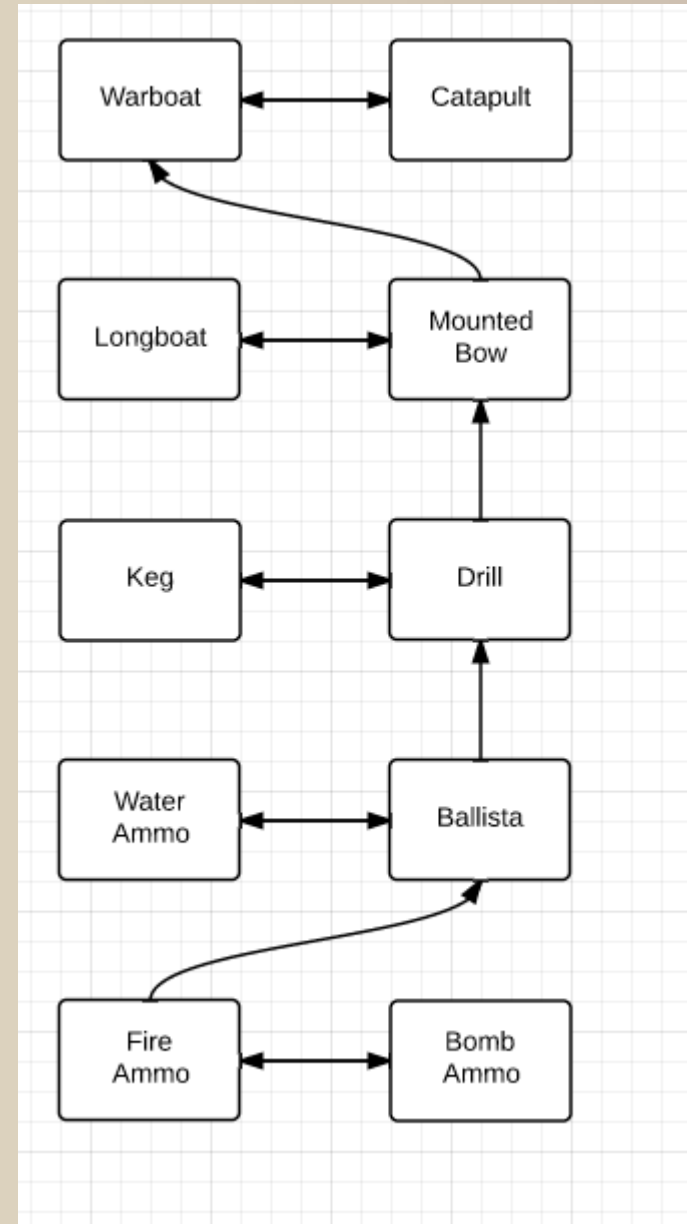
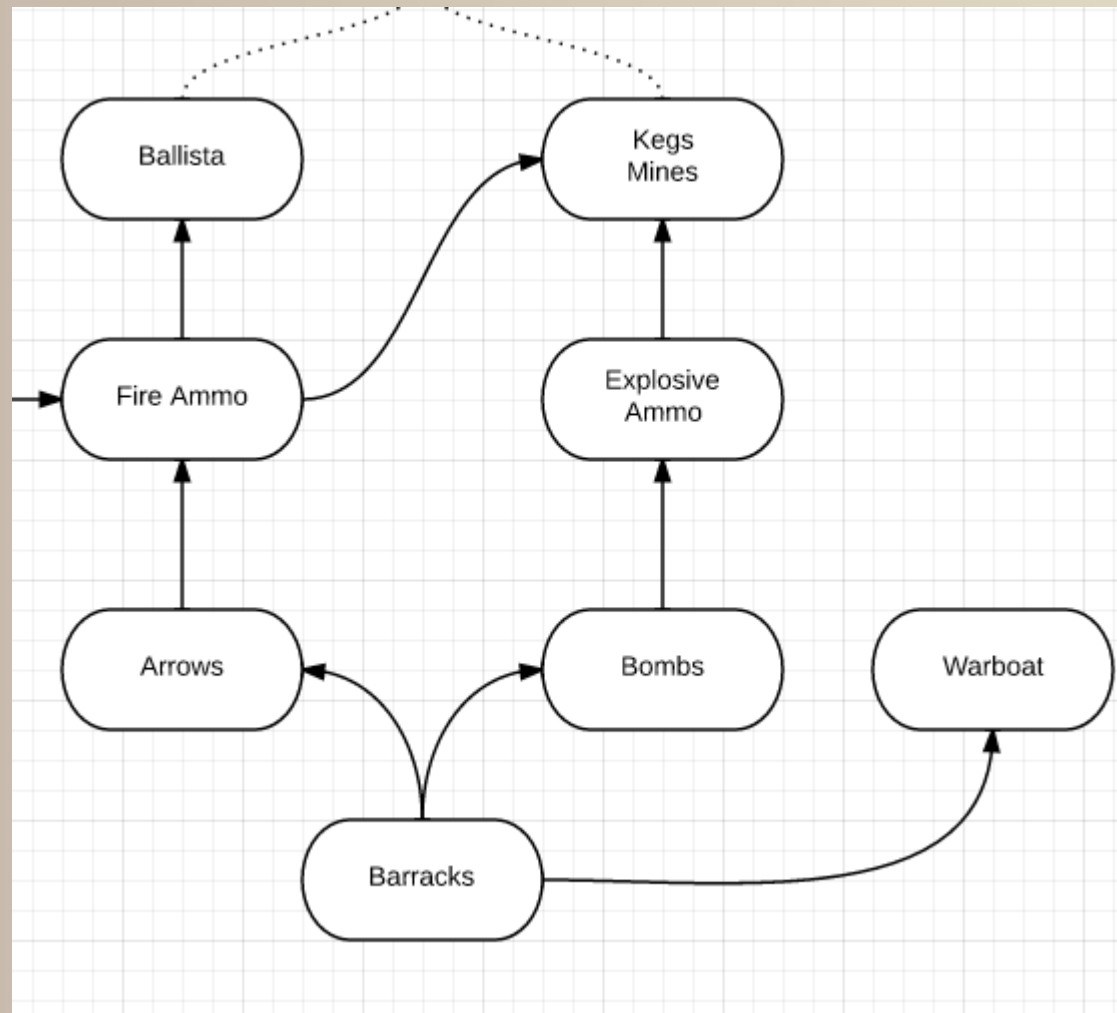
Ⓢ IS SIEGE

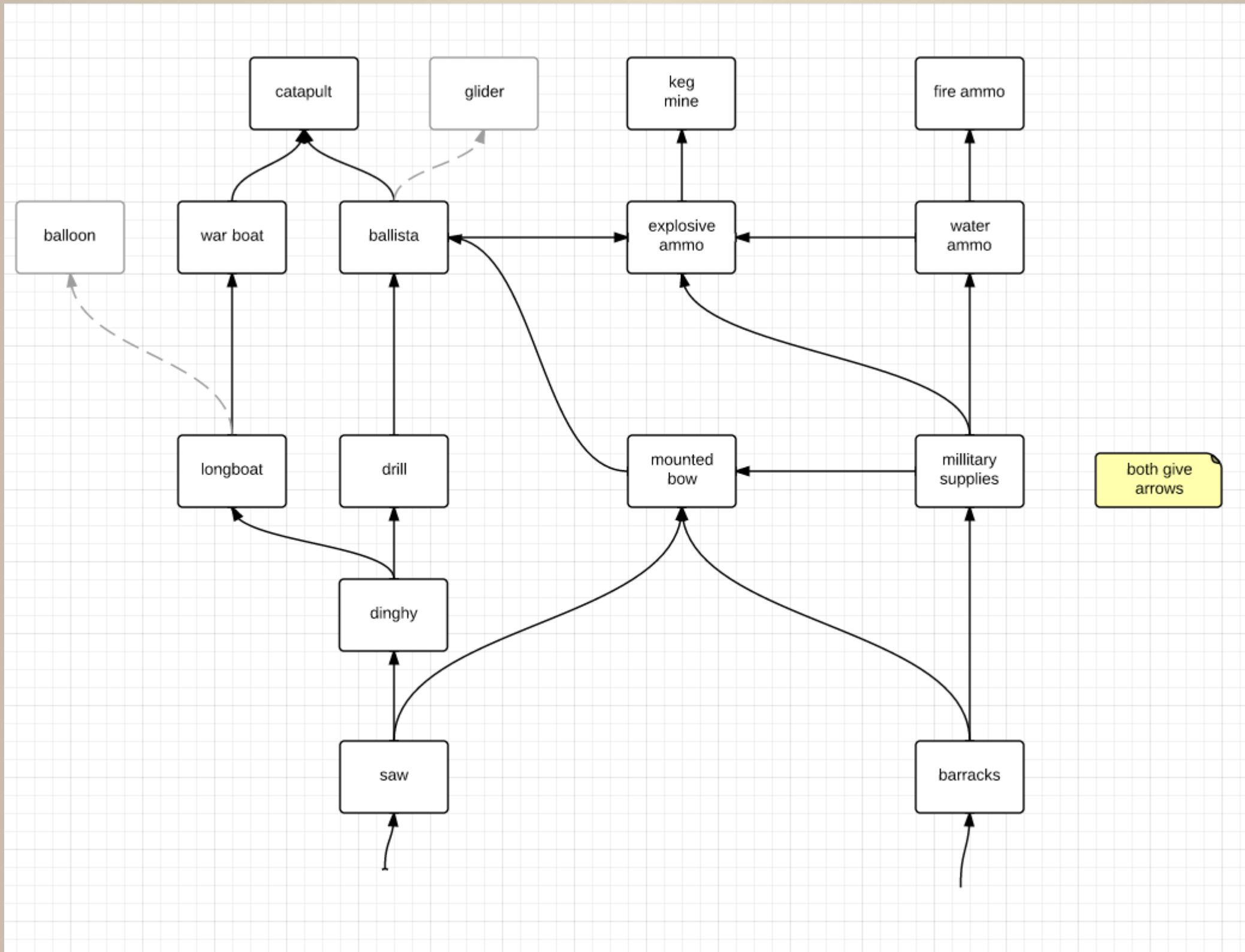
Ⓒ IS CLASS

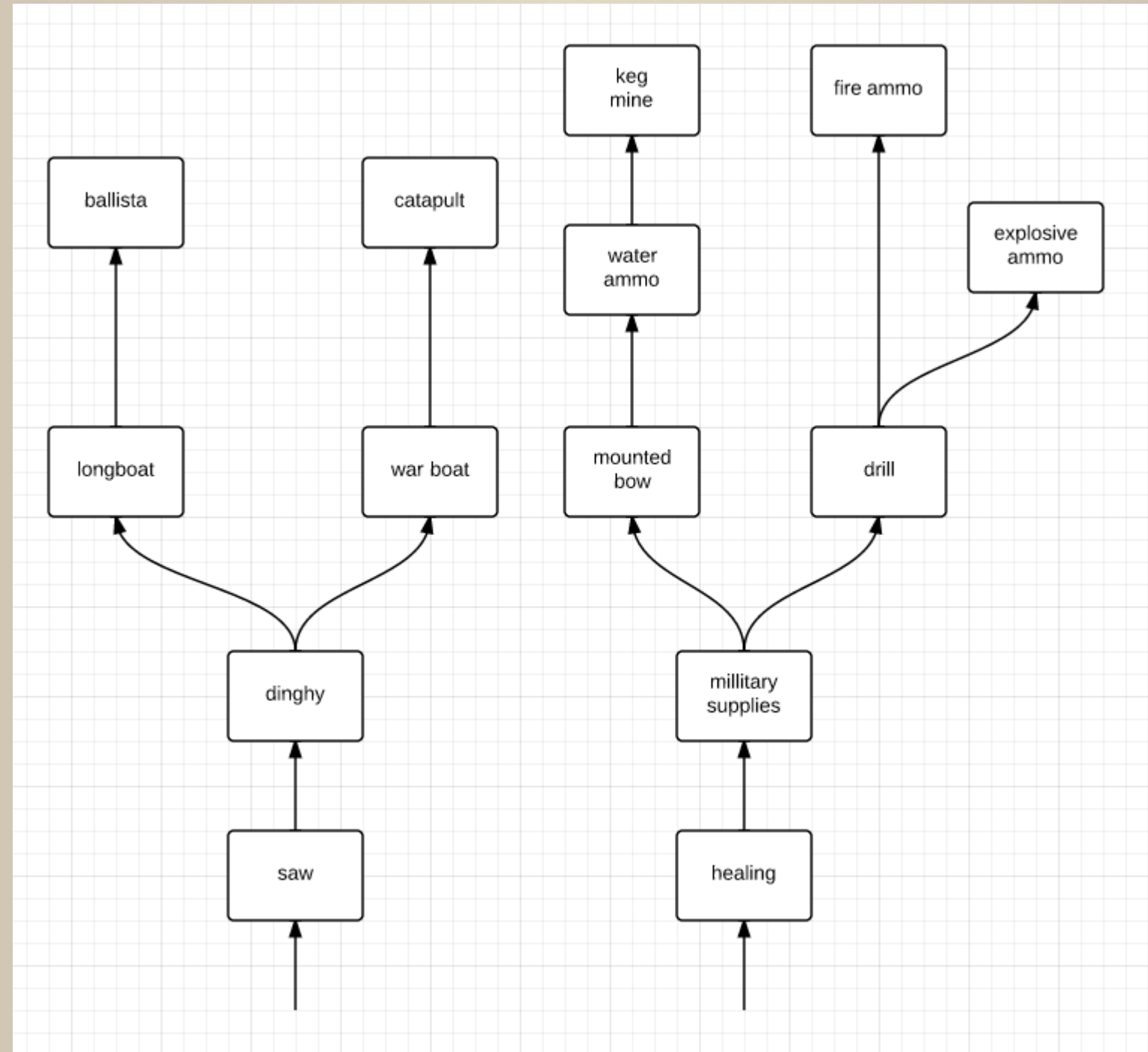














# Scripting

```
Archer Data
bool m_dead
char m_keys
string m_animation
bool m_onGround
```

```
Archer Tick
void OnTick()
{
  m_dead = !IsAlive();
  m_keys = GetKeys();
  m_onGround = IsTouchingGround();
  m_animation = GetArcherAnimation( m_keys, m_onGround, m_dead);
}
```

```
string GetArcherAnimation( char keys, bool onGround, bool dead)
{
  if (dead)
    return GetDeadAnimation( onGround );
  else
    return GetAliveAnimation( keys, onGround );
}
```

```
string GetDeadAnimation( bool onGround )
{
  if (onGround)
    return GetDeadGroundAnimaton();
  else
    return GetDeadAirAnimaton();
}
```

```
string GetDeadGroundAnimaton()
{
  return "DeadFlat";
}
```

```
string GetDeadAirAnimaton()
{
  return "DeadFlying";
}
```

```
string GetAliveGroundKeyLeftAnimation()
{
  return "Running";
}
```

```
string GetAliveGroundKeyRightAnimation()
{
  return GetAliveGroundKeyLeftAnimation();
}
```

```
string GetAliveGroundNoKeysAnimation()
{
  return "Standing";
}
```

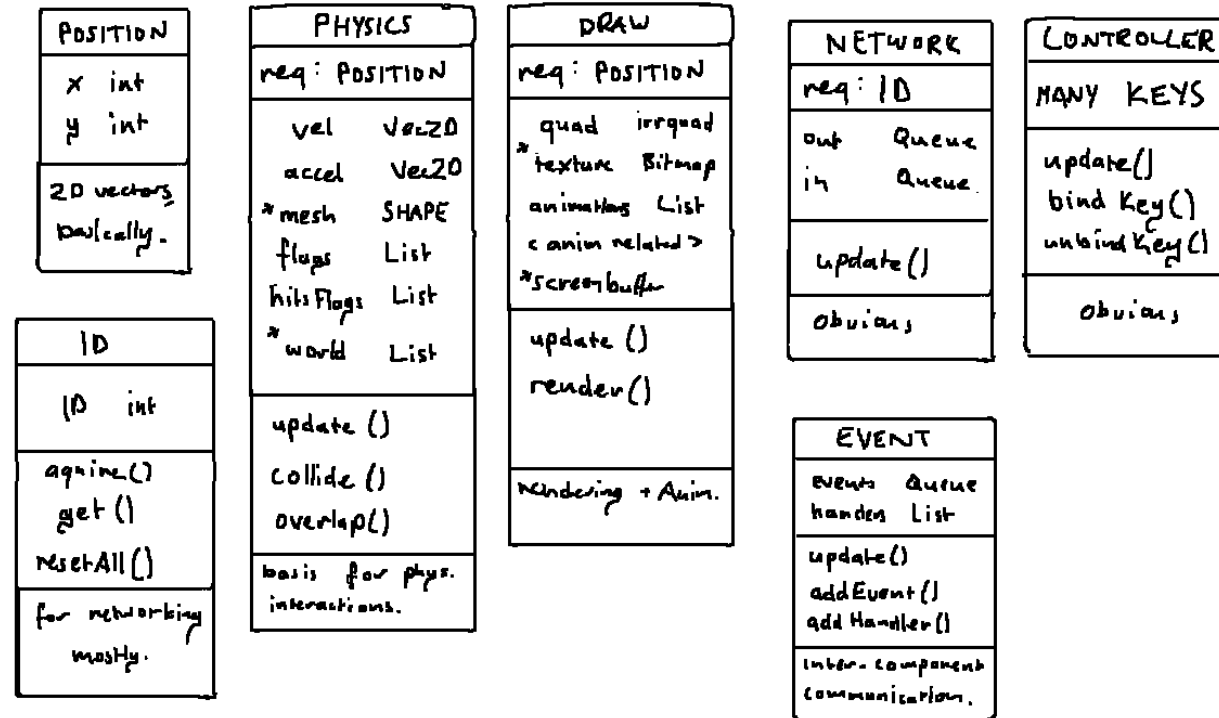
```
string GetAliveGroundAnimation( char keys )
{
  if (keys | key_left)
    return GetAliveGroundKeyLeftAnimation();
  else
    if (keys | key_right)
      return GetAliveGroundKeyRightAnimation();
  else
    return GetAliveGroundNoKeysAnimation();
}
```

```
string GetAliveAnimation( char keys, bool onGround )
{
  if (onGround)
    return GetAliveGroundAnimation( keys );
  else
    return GetAliveAirAnimation();
}
```

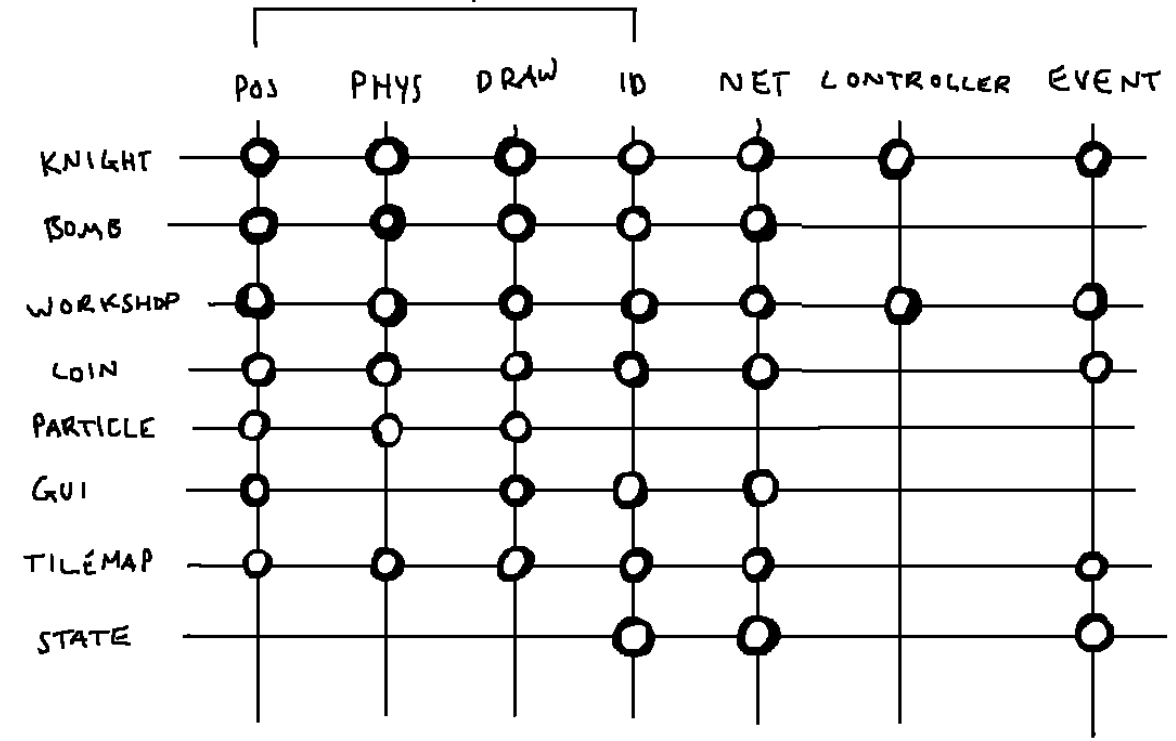
```
string GetAliveAirAnimation()
{
  return "Flying";
}
```



COMPONENT DESIGN



could perhaps be merged...

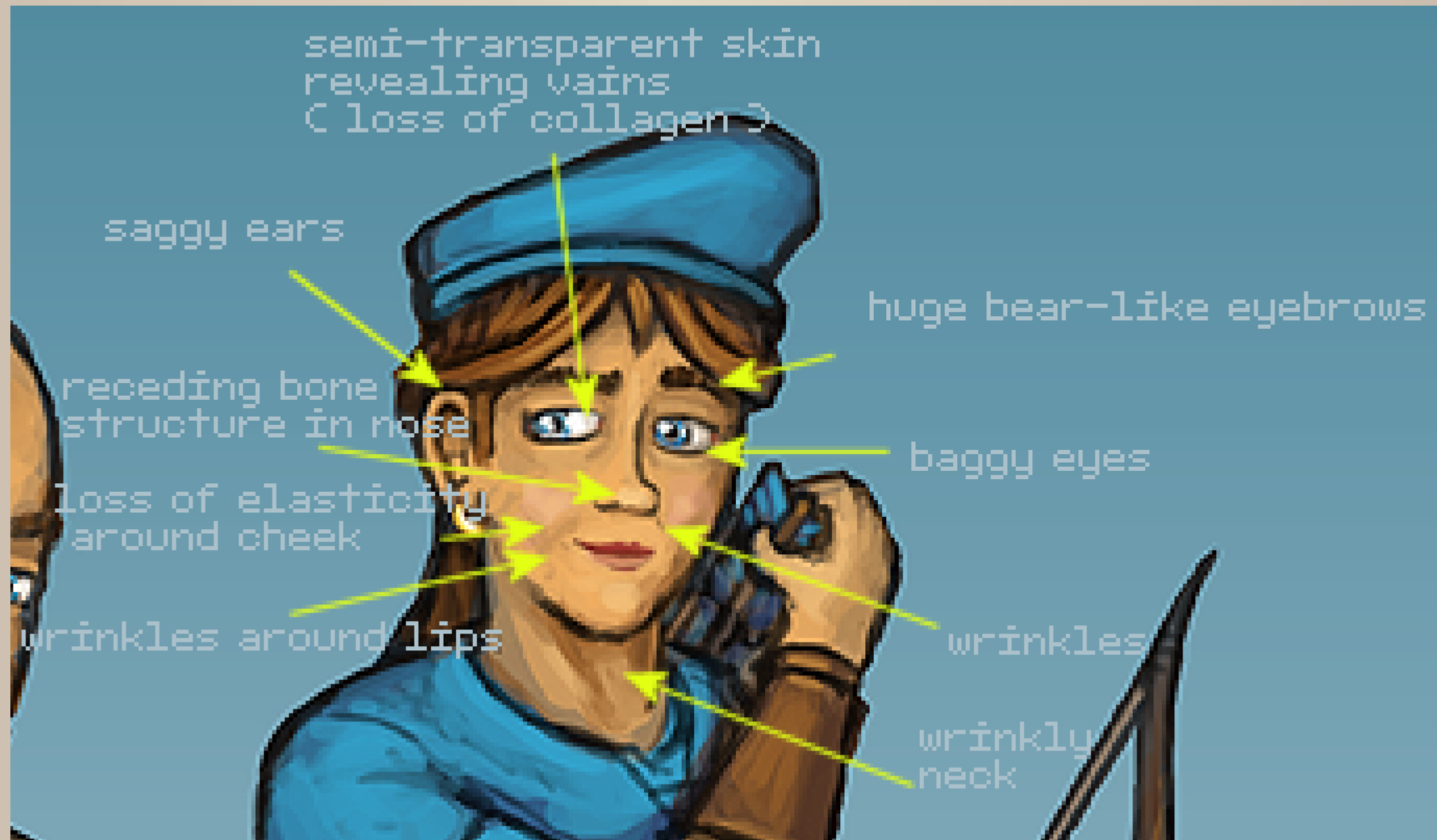


Idea of making "blobs"  
- single objects in the  
game made of  
components.



# Collaboration





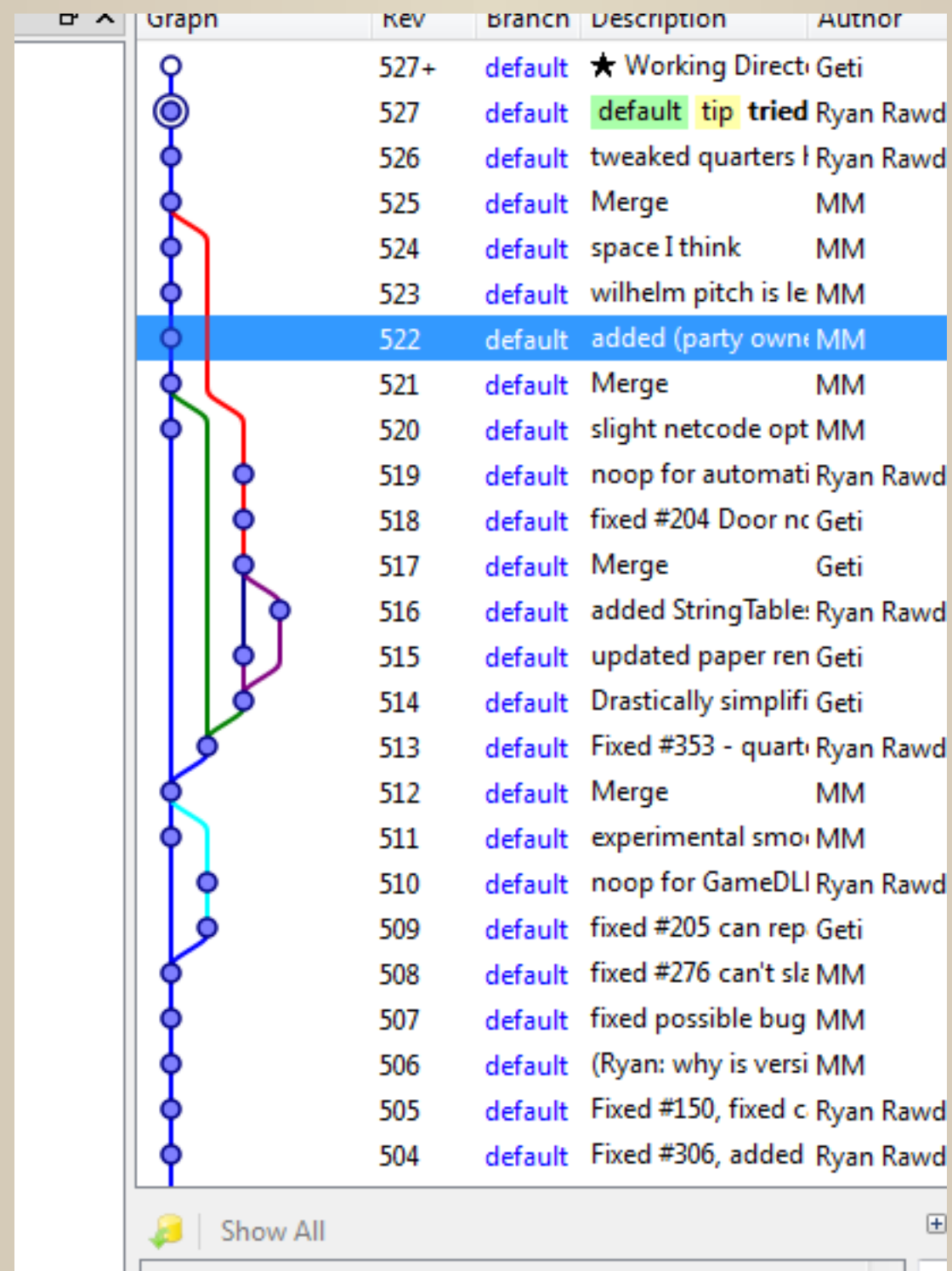
MM trying to explain that she looks 40  
(an unrealistic age for medieval times)

ZOMBIES PILE UP  
AND ARE USELESS

PLAYER IS BORED

FALL DOWN HERE  
AND END UP GOD  
KNOWS WHERE





The busy KAG code repository



The "sliding slopes hack"



The very difficult to fix collision error due to lag





Different things wrong in the initial implementation of smooth shaded tiles.

# Overhauls



Many times it was attempted to completely redraw KAG. Including realistic figures, hi-res graphics. This picture also contains different knights ideas, a movable platform, canopy, bison, sand tile and conveyor belt idea.



*This was a test with realistic proportion characters.*



What if KAG was hi-res instead of 2x scale pixel?

# REVISED CTF

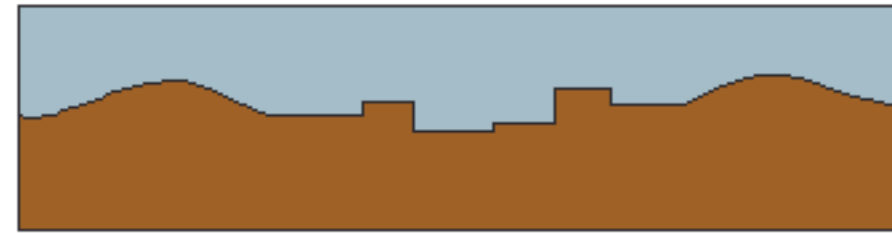
only being able to spawn as a builder at the side

- > unable to rush effectively (you have to rush as noncombatants)
- > tents can be destroyed -> more dynamic battles
- > flag should be separate, can be carried around and placed atop a tower or whatever.
  - > teams could get a drip of funds for the flag being exposed to the air
  - > teams could subsist without builders for a while

We don't have enough emphasis on base creation at this point, I think. Everyone builds a huge spikepit and then runs off, as the flag can't be put atop anything as the tent can't be moved. needing to build a tent or outpost (tents should respawn you twice as fast) lets players decide where to set up camp and how early to start having a military - it also makes finding gold important! (not gold, no military)

I think this would

- encourage teamwork and base building.
- allow smaller maps -> less lag -> game more accessible + the "map succession" idea is more viable (you won't end up with huge maps as quickly).
  - smaller maps are also more fun because you spend less time running back to the battle, and because overturning an outpost means a lot more in terms of ground acquired.
- be more fun as a consequence of this.

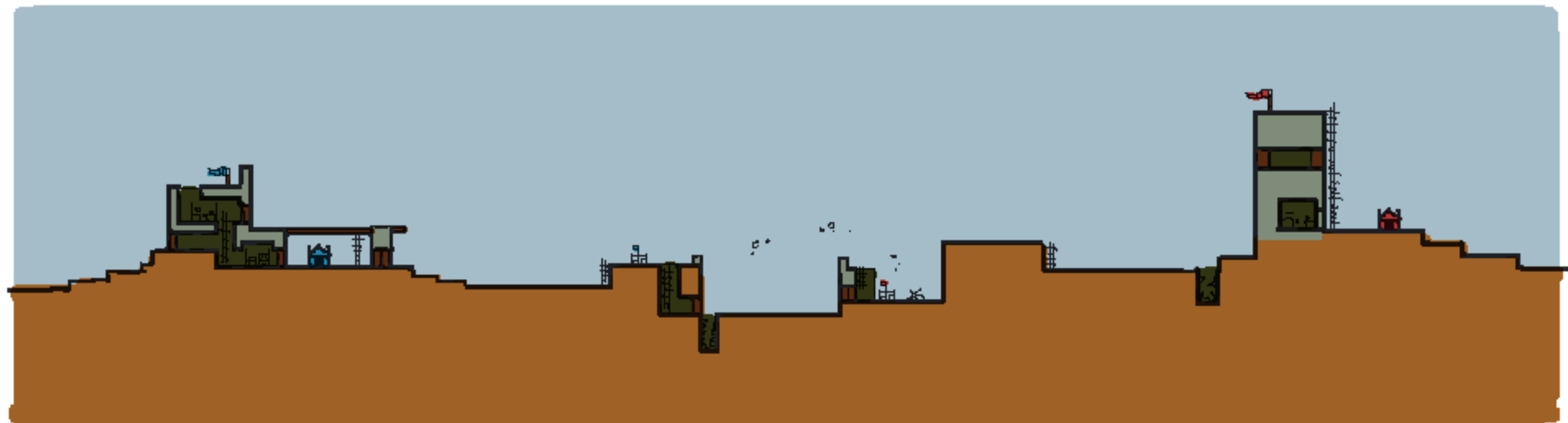


mountain  
gen code

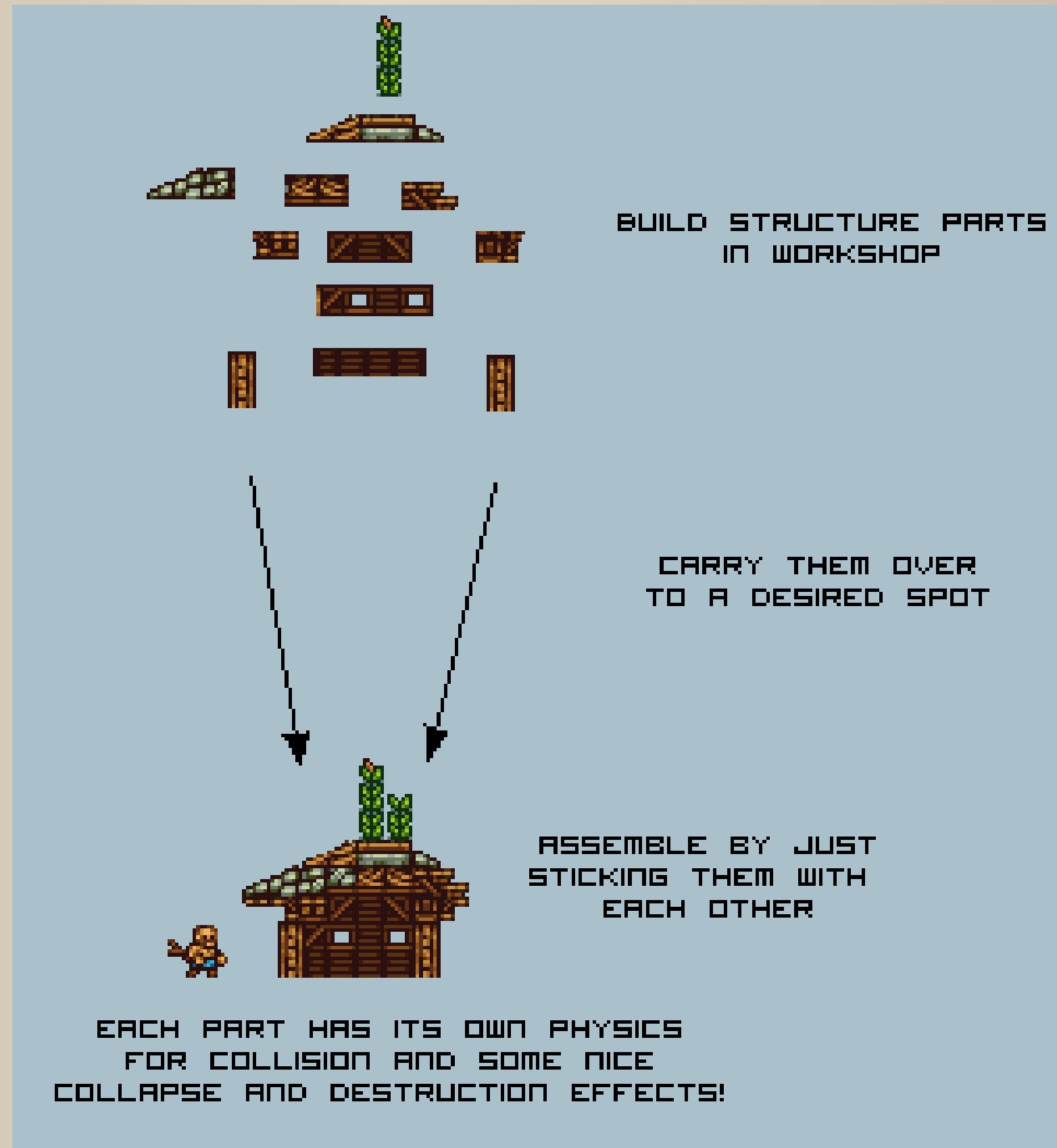
steppes - step  
function in middle

mountain  
gen code

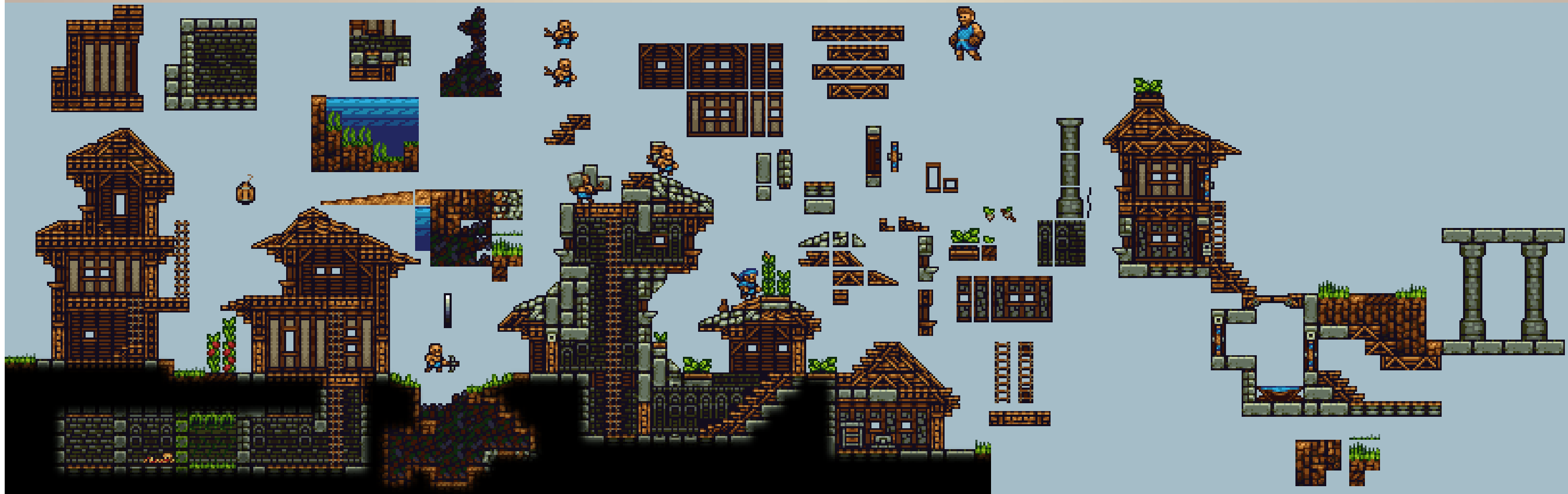
prevents rushing and leads to more interesting battles - less  
"hold right + jump till you're at the play field" = good



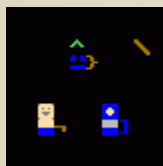
"Sprite Structures"







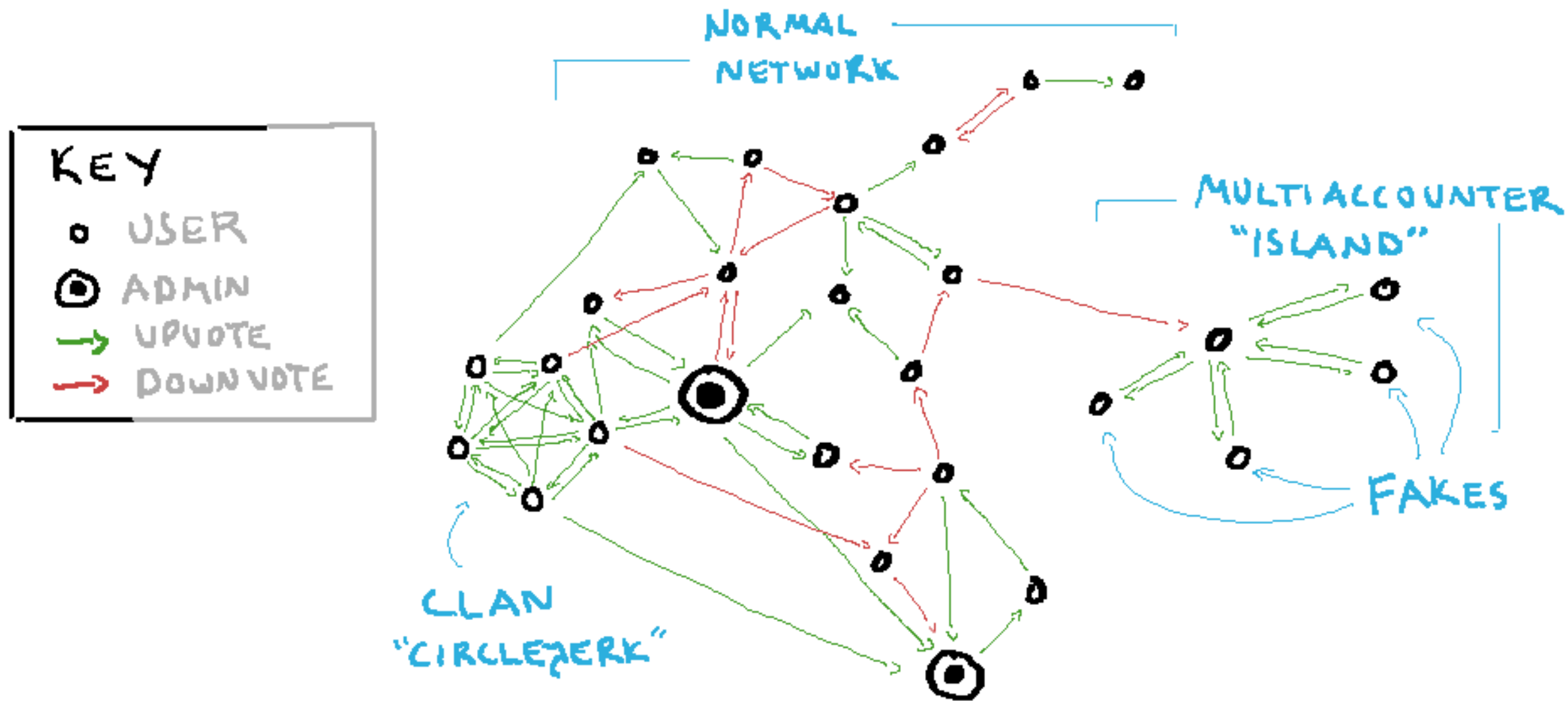
An attempt to make KAG less blocky with so called "sprite structures".



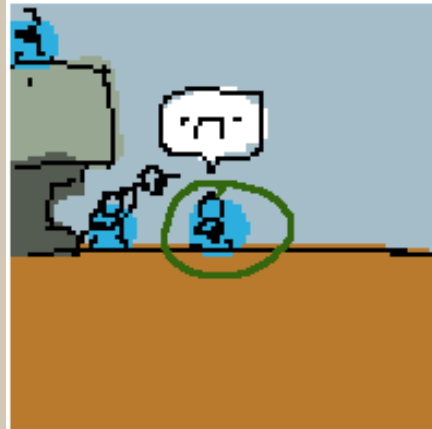
KAGSCII

# Admin tools

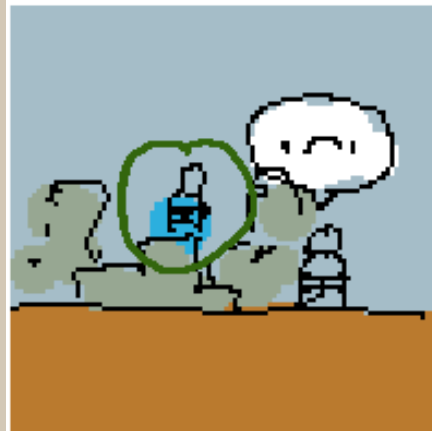
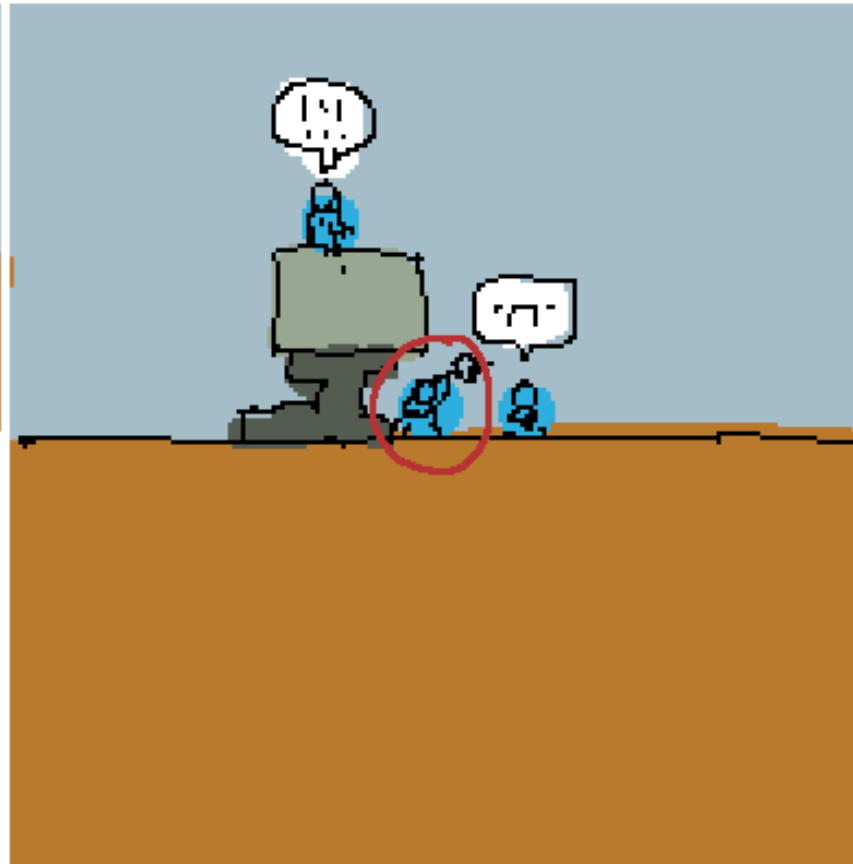
GRAPHICAL MODERATION CONCEPT.



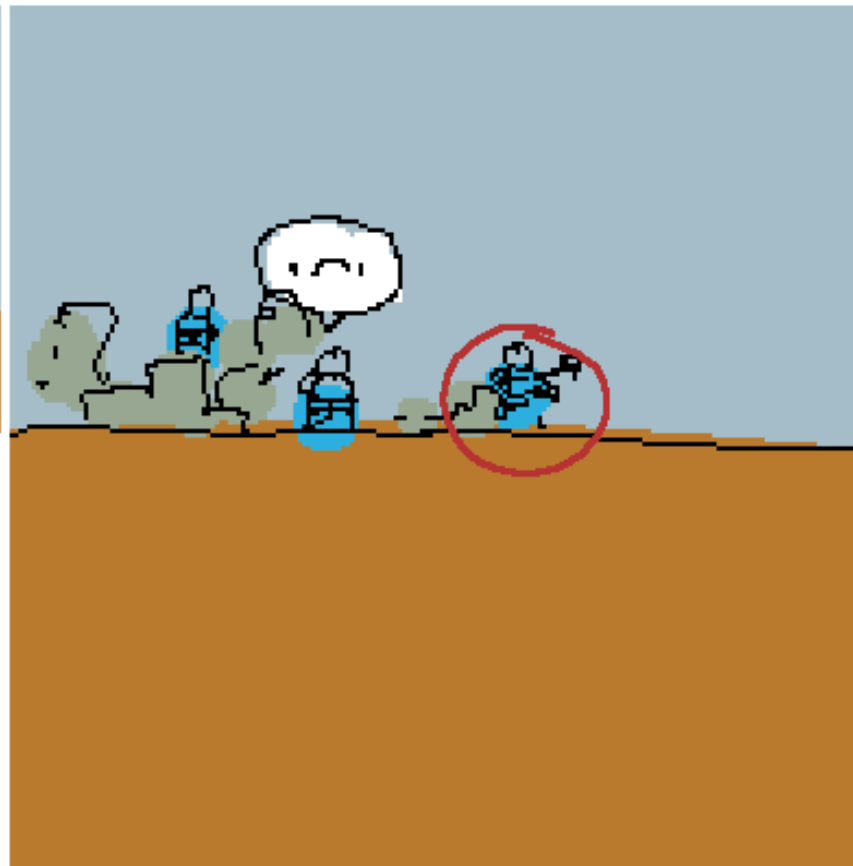
Reported User: DickLordSuperWank  
From Server: gC gamingCrew Euro



From: Reporter 1  
Distance: 5 meters  
Time: 10:05AM



From: reporter2  
Distance: 24M  
Time: 10:06AM



## Scoreboard commands - inspired by Vania.

These options should only be available for registered users. Paid users should get a weighted vote perhaps (put in the licence agreement that abuse therein results in account deletion -> griefers pay us money if they want to abuse it)

| ID | NAME       | SCORE | K  | D  | R    | UP | DN | MUTE | GRIEF |
|----|------------|-------|----|----|------|----|----|------|-------|
| 0  | GETI       | 30    | 2  | 1  | 2    | ↑  | ↓  | *    | X     |
| 1  | BILBS      | 50    | 5  | 3  | 1.6  | ↑  | ↓  | *    | X     |
| 3  | PEASANT    | 0     | 0  | 1  | 0    |    |    | *    | X     |
| 6  | NOT_SEDG.. | 0     | 0  | 0  | 0    | ↑  | ↓  | *    | X     |
| 2  | MM         | 80    | 5  | 2  | 2.5  | ↑  | ↓  | *    | X     |
| 4  | NEAT       | 120   | 12 | 10 | 1.2  | ↑  | ↓  | *    | X     |
| 5  | CONTRARY   | 810   | 81 | 2  | 40.5 | ↑  | ↓  | *    | X     |
| 7  | VANIA      | 130   | 10 | 5  | 2    | ↑  | ↓  | *    | X     |

I'll have to make icons for these

up = upvote account  
(costs 0.25 rank)  
down = downvote account  
(costs 0.5 rank)  
mute = ignore chat from this user.  
grief = this person is griefing, mark them as such (long-term  
votekick - requires 30% marks against you)

Getting kicked for griefing should send us a screenshot of said user so we (or some volunteer mods) can look into it

# Bugs







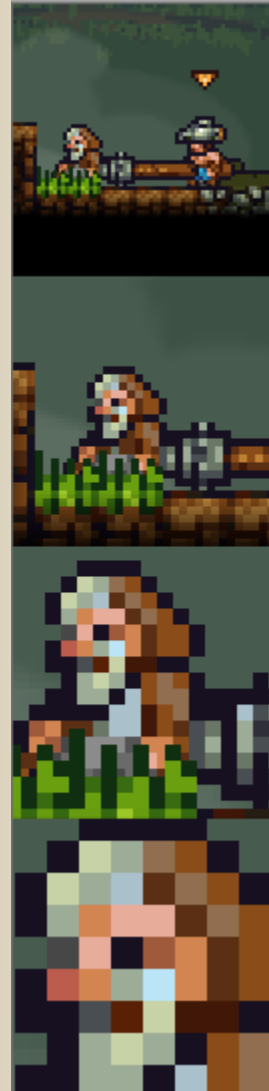


Not really a bug but it was possible to completely lag  
the game by burning a stack of ladders



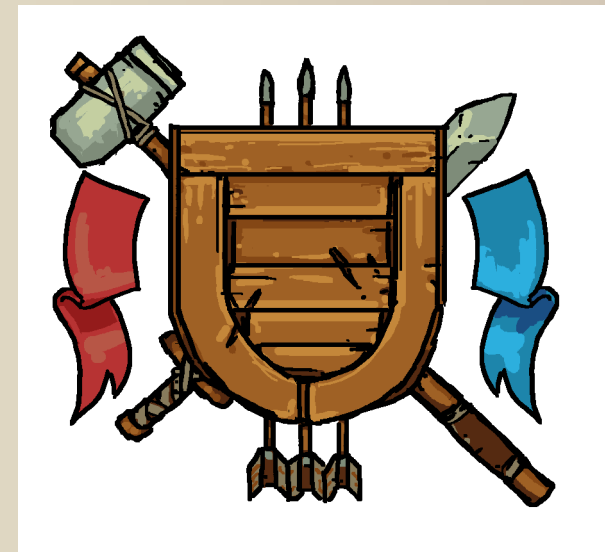
BUILD [MOUSE LEFT]  
MINE [MOUSE RIGHT]  
CHANGE BLOCK [F]

ZOOM IN [MOUSE SCROLL UP]  
ZOOM OUT [MOUSE SCROLL DOWN]



# Promotional





Logos



# KING ARTHUR'S GOLD

by the creator of the award-winning 8-bit classic, *Starblaster 6000*



The illustration features three characters in a medieval setting. On the left, a man with a mustache wears a blue hooded cloak and a grey chest plate, carrying a large wooden shield. In the center, a bald, muscular man with a beard is shirtless, wearing blue trousers and a brown belt. On the right, a woman in a blue tunic and cap holds a bow and arrow. The background shows a misty landscape with a stone castle on a hill and a body of water with ships. The title 'KING ARTHUR'S GOLD' is overlaid in a stylized, metallic font.

# KING ARTHUR'S GOLD

BACK WHERE  
YOU CAME  
FROM, FILTHY  
RED!



ITEMS DROP FROM:



DEAD



PRESS C  
TO DROP RESOURCES

DROPPED ITEMS  
ARE FAIR GAME!



TOUCH THEM TO  
PICK THEM UP!





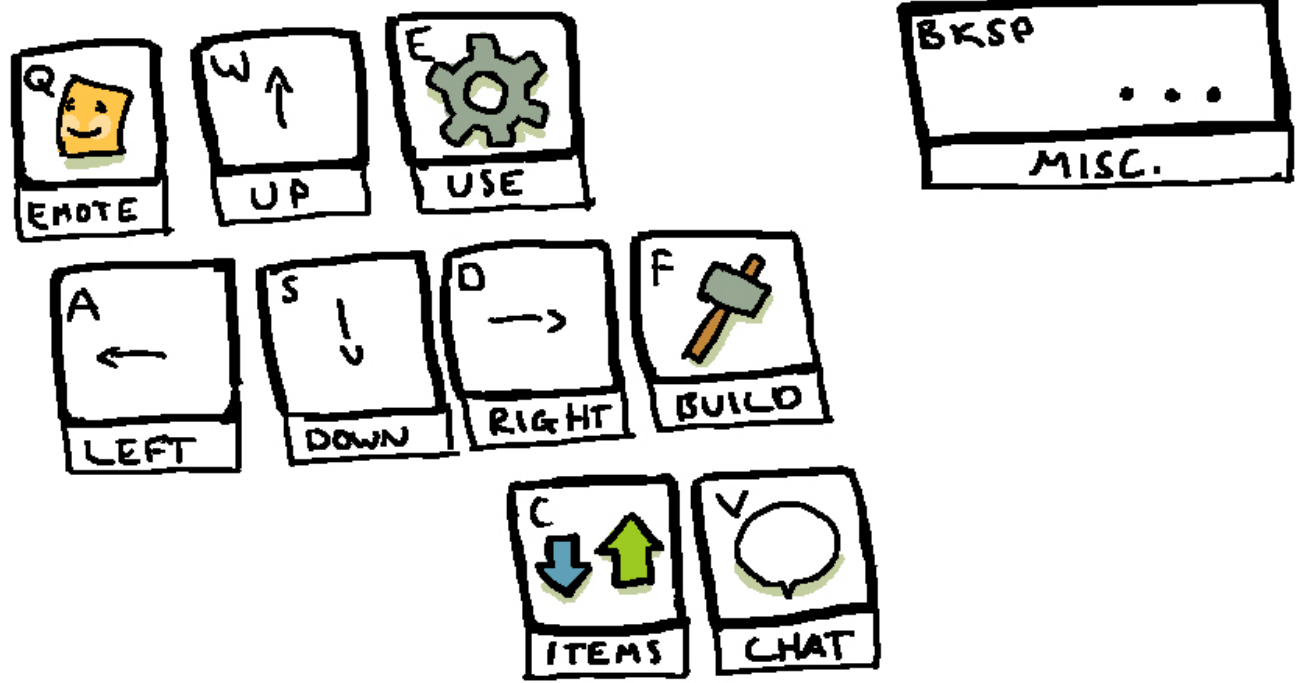
Knockback



Fall damage







# PARTY MODE

(NOT THAT KIND OF PARTY)

HIRE MIGRANTS  
AT QUARTERS



WITH [E]

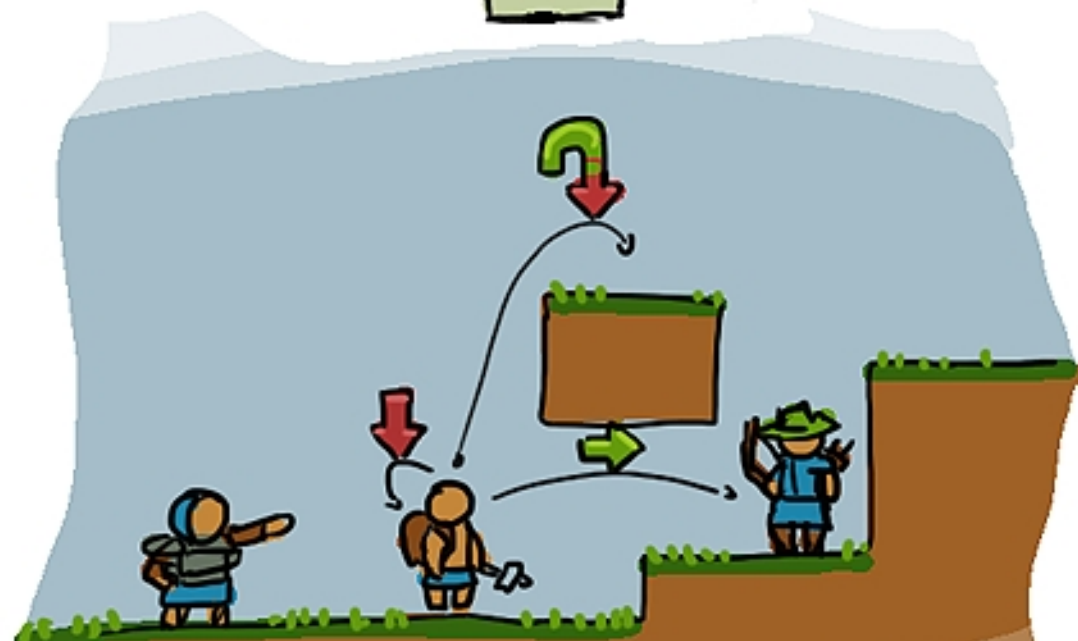
ORDER YOUR  
PARTY MEMBERS



AROUND WITH [R]

# PARTY CONTROLS

YOU ONLY NEED  
ONE KEY...

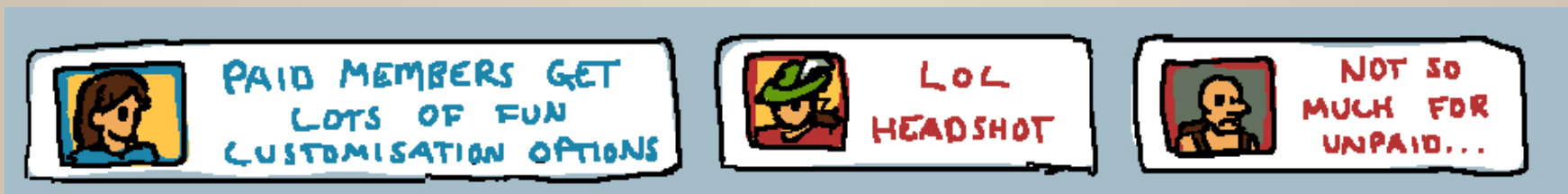


GO-TO : DRAG POINTER TO  
DESTINATION

STAY : HOLD POINTER NEAR

FOLLOW : POINT TO TEAM-MATE

CONTROL : TAP R



"Buy banner" - mini

# GET YOUR PREMIUM SHIT!!!!

 PAID MEMBERS GET  
LOTS OF FUN  
CUSTOMISATION OPTIONS

 LOL  
HEADSHOT

 NOT SO  
MUCH FOR  
UNPAID...

**ZOMBIES!!!**



**PLAYER CUSTOMIZATIONS**



**MECHANISMS**



**SIEGE WEAPONS**



**ITEMS**



**ANIMALS**



**FIRE!**



The "buy banner" meant to be placed in the game menu



PSST...

PRE-ORDER DURING ALPHA 50% OFF

# KILL THUMB WORLD

FREE



FULL



|               |   |  |
|---------------|---|--|
| CUSTOMISATION |   |  |
| GAME MODES    |   |  |
| SIEGE WEAPONS |   |  |
| ZOMBIES       | × |  |
| MECHANISMS    | × |  |
| items         | × |  |
| FIRE!         | × |  |

↑  
cram it more!  
it's ok to leave some stuff out

CLICK TO BUY NOW  
~~19.99\$~~ 9.99\$

can you just draw the lion heads by hand without pixeling? cause it really should be larger and why bother with pixels

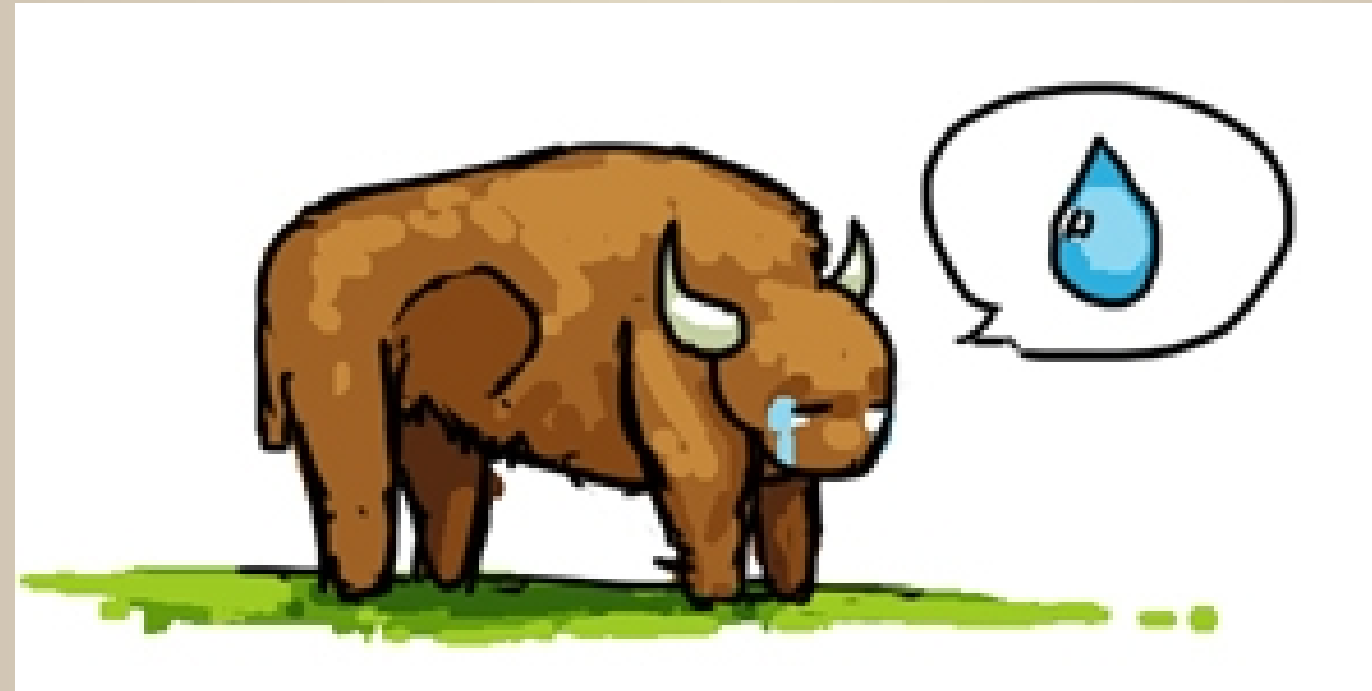
maybe a different way of representing the game modes? it really is much more than a "game mode"

spread it all out!

preferably no text? just show how people get killed in the traps

add ANIMALS?

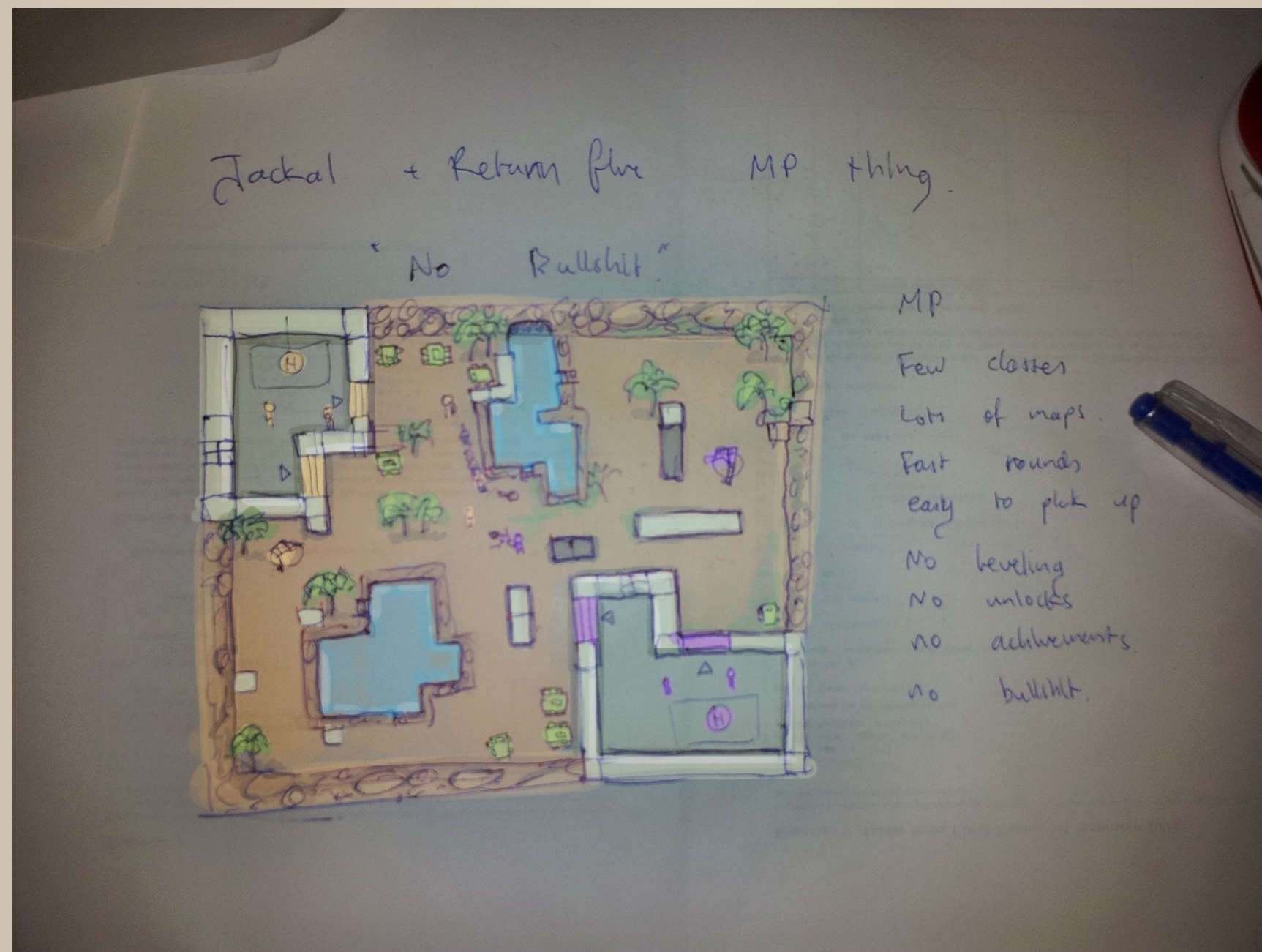
MM micromanaging the "buy banner".  
Introducing this inside the game lead to a 2000% sales increase.



The end

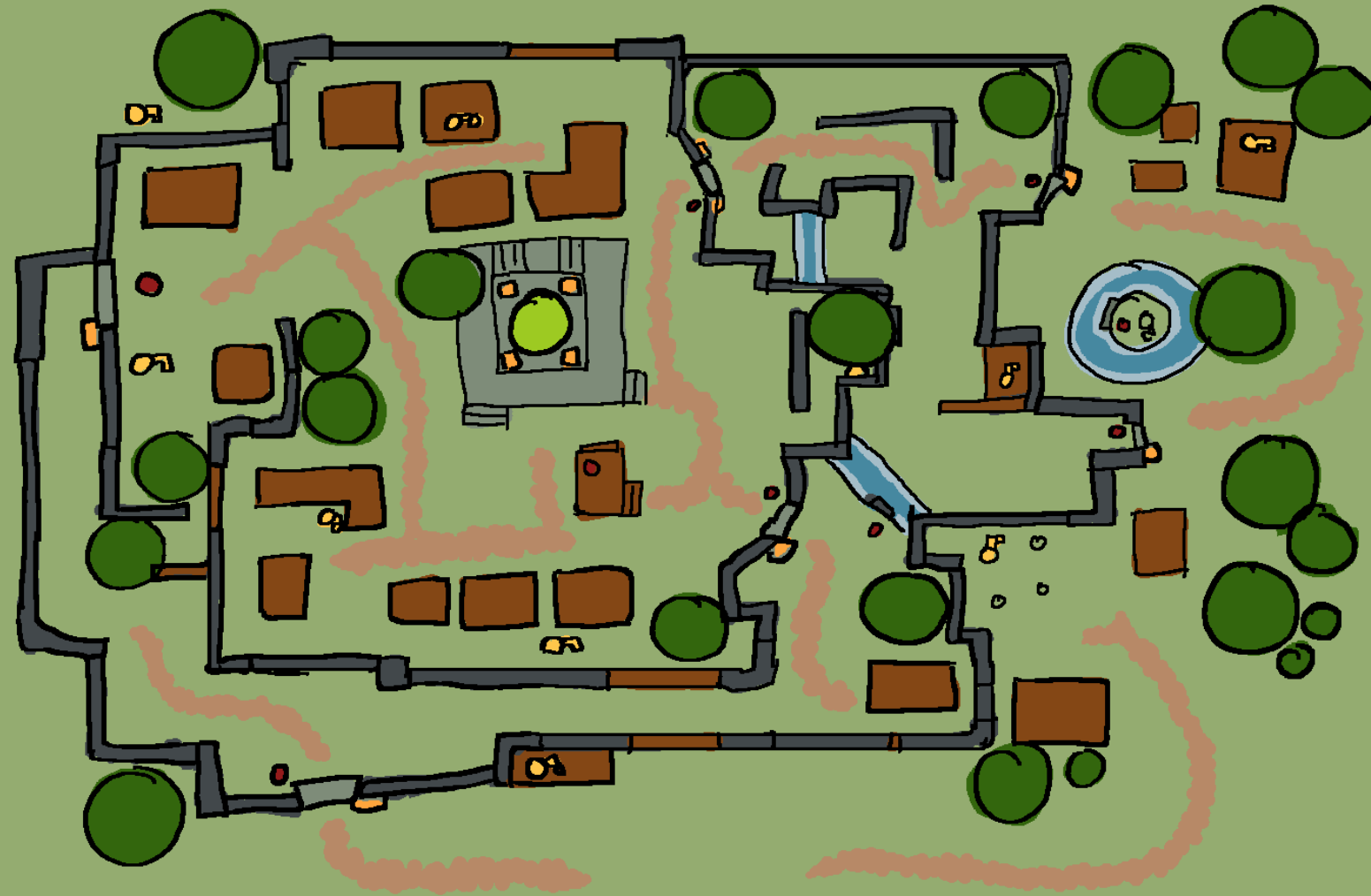


# Bonus: sketches of future game ideas



## GOALS

- COOPERATION AND COMPETITION - FAST PLAY
- REWARD EXPLORATION







POCKETS



PACK





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