# ANU Agile Digital: Autonomous Exploration & Mining Simulation - Map Creation instructions for game server administrator

All maps require a playable field which is surrounded by wall('w') tiles. Although they don't explicitly need to have gold on them, it is recommended for non-boredom unless you wish to confuse/troll the player. These fields should be saved as a text document with a ".field" extension so for example, if you wished to create a map called "1" you would simply need to create a new text document, add the desired tiles and save it as: "1.field". Indeed the src/main/resources/fields folder is used for competition and for ease of advancement, the .field files are just numbers.

Standard Map

Standard maps are created in the following way:
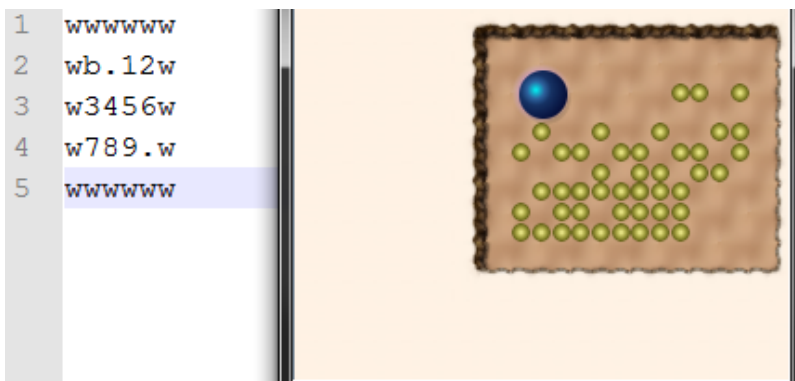
the 'b' represents the base which the digger will need to drop the gold and represents the starting position of the digger.

'w's are walls and cannot be traversed by the digger.

'.' are empty tiles. Essentially, they are gold tiles with nothing on them.

the numbers 1-9 are tiles that hold the corresponding number of gold.

Additional Features

All additional features are switched on for a map in the .field files themselves. All features in the .field files, are preceded by the feature identifying delimiter - '!'. Some features will also require a value passed to it. Most of these features simply require an additional '=' followed by the value but others require more parameters and will be shown in detail in their respective sections.

Additionally, so that the parser knows when the actual field/map begins:

```
!field-tiles
```

should precede the actual field tiles(when additional features are added) as well as a newline. The traditional map earlier, would now look like:

```
!field-tiles
wwwwww
wb.12w
w3456w
w789.w
wwwwww
```

If you wish to see how any of the following changes affect the competitors, please read the competitor API.

Line Of Sight

By default the line of sight of the diggers is 1 which means they can only see adjacent tiles. If you wish to change this so that the diggers can view more tiles per view command on a particular map(lets just say 2 for this example), simply add:
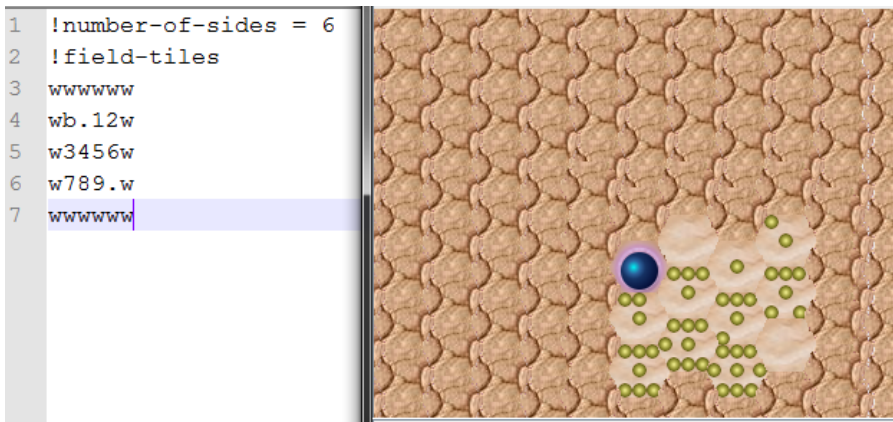
```
!line-of-sight = 2
```

to the field file:

```
!line-of-sight = 2
!field-tiles
wwwwww
wb.12w
w3456w
w789.w
wwwwww
```

Hexagon Tiles

Making a map with 6 directional movement is done as follows:

```
1   !number-of-sides = 6
2   !field-tiles
3   wwwwww
4   wb.12w
5   w3456w
6   w789.w
7   wwwwww
```

Maps will default to 4 if a number-of-sides is not specified and if any value other than 6 is entered

Occlusion

Occlusion is off by default and turning for the map is done with the following addition to the field file:
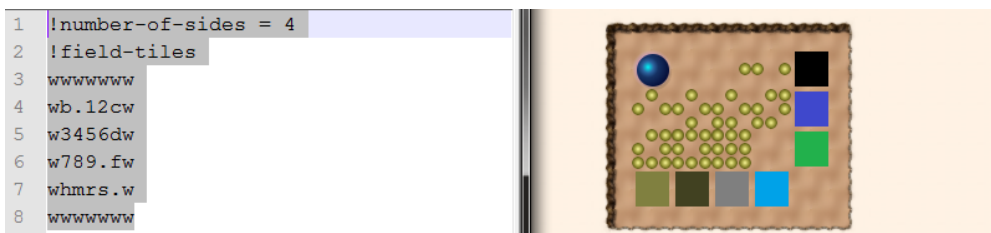
!enable-occlusion

in an actual .field file:

```
!enable-occlusion
!field-tiles
wwwwww
wb.12w
w3456w
w789.w
wwwwww
```

Additional Tiles

There are a bevy of new tiles that can be added to maps. each have their own occlusion height, travel cost and colour as represented in the image below.

```
1   !number-of-sides = 4
2   !field-tiles
3   wwwwwww
4   wb.12cw
5   w3456dw
6   w789.fw
7   whmrs.w
8   wwwwwww
```

The above images shows how to add these new tiles to the map and the table below shows their default values and what their short-hand map representations correspond to.

Tile	Map Representation	Movement Costs	Occlusion height	Score cost:
Bank	b	100	0	0

City	c	200	2	0
Deep Water	d	500	0	0
Forest	f	300	1	0
Gold	"."(0 gold) or 1-9(1-9 gold)	100	0	0
Hill	h	175	2	0
Invisible Teleport	N/A	100	0	0
Mountain	m	500	3	0
Road	r	25	0	0
Shallow Water	s	150	0	0
Visible Teleport	t	100	0	3
Wall	w	N/A	Integer Max	0
Occluded Tile	?	N/A	N/A	N/A
Map Wrapper	-	N/A	N/A	N/A

 Teleports are detailed later on and the Map Wrapper, Occluded Tile are only shown within the game. Check out the Competitor API if you wish to have more context on these how they are used(this also applies to the other columns like score cost).

Costs

As the table in the above section shows, tiles have default movement cost which you can change for the map you are creating or editing if you wish:

```
!cost-per-type
h=5000
```

the above changes all hills in the .field file to have a travel cost of 5000 milliseconds. For further changes simply add any other tile on a new line with the desired value So if you wanted cities with a travel cost of 1000:

```
!cost-per-type
h=5000
c=1000
```

```
!cost-per-type
h=5000
c=1000
!field-tiles
wwwwww
wb.12w
w3456w
w789.w
wwwwww
```

Teleport Tiles

Teleport tiles can't be added as simply as the other tiles so they require their own delimiter section to specify the mappings,

Disadvantageous Teleports:

Disadvantageous teleports are invisible to the competitors and are one-way. You add them to a .field file by adding:

```
!dis-teleport-mappings
3,4 -> 1,4
```

The line below the delimiter specifies the co-ordinate of where the disadvantageous teleport begins(the co-ordinate before the arrow) and where it will teleport the digger to if stepped on(after the arrow)

Advantageous Teleports:

Advantageous teleports are seen as white squares(or hexagons) and can be interacted with by the player(see competitor API) and are defined in field files thusly:

```
!adv-teleport-mappings
1,2 -> 4,5
```

The above will create two teleport tiles, either one can be used to teleport to the other's location. When a map is created, the advantageous teleports will essentially sit on-top of the tile that was originally on the map. The below example shows a field file with advantageous teleports created at 1,2 and 4,5. These tiles in the view replace the '.' but they don't remove it from the map altogether. Once a teleport is picked up, the original tile will be visible.
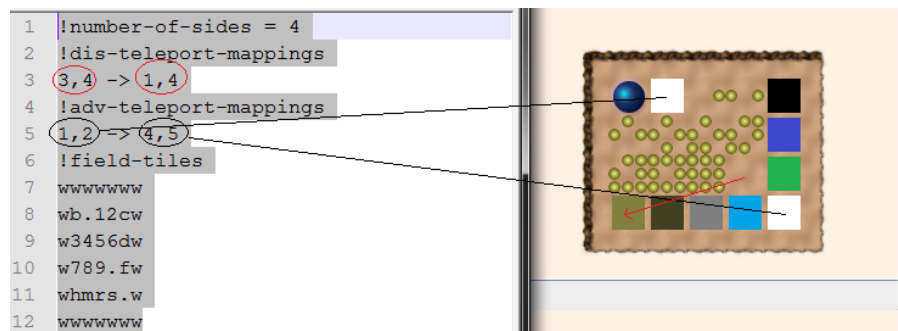
like costs, further mappings can be added on newlines:

```
!dis-teleport-mappings
3,4 -> 1,4
1,2 -> 3,4
```

```
!adv-teleport-mappings
1,2 -> 4,5
1,3 -> 6,3
7,10 -> 2,8
```

Multiplayer

To create a multiplayer map:

```
!multiplayer
```

By default, the start time, running time and ending time for a multiplayer map are 60000, 600000 and 120000 milliseconds(1,12,2 in minutes) respectively. If you wish to set your own times for these phases add:

```
!multiplayer
start = 200
duration = 240000
end = 200
```

Omission of any of the above attributes:

```
!multiplayer
duration = 240000
```

will make set them to their default values when the map is created

If you wish to add combat to the multiplayer map(or any map but seems pointless in single player...):

```
!enable-cannons
```

Here's an example in an actual .field file:

```
1   !number-of-sides = 4
2   !enable-cannons
3   !multiplayer
4   start = 200
5   duration = 240000
6   end = 200
7   !field-tiles
8   wwwwww
9   wb.12w
10  w3456w
11  w789bw
12  wwwwww
```
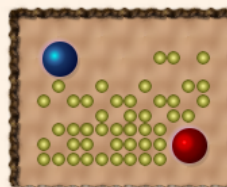
Everything

For completeness let's check out a map with every feature enabled:

```
1   !enable-cannons
2   !multiplayer
3   start = 200
4   duration = 240000
5   end = 200
6   !line-of-sight = 3
7   !number-of-sides = 6
8   !dis-teleport-mappings
9   4,4 -> 1,4
10  !adv-teleport-mappings
11  1,2 -> 4,5
12  !daynight-cycle-time = 10
13  !daynight-scale = 50
14  !enable-occlusion
15  !cost-per-type
16  h=5000
17  !field-tiles
18  wwwwwww
19  wb.12cw
20  w3456dw
21  w789bfw
22  whmrs.w
23  wwwwwww
```