

# CS 246 Game of Constructor Demo Plan

Name: Yifan Qu, Jiaqi Shang

Files that we need in this demo `board.h`, `builder.h`, `edge.cc`, `game.cc`, `residence.h`, `tile.h`, `vertices.cc`, `boardTemplate.txt`, `layout.txt`, `neighbours.txt`, `test.log`, `Makefile`, `board.cc`, `boardCommand.txt`, `builder.cc`, `edge.h`, `game.h`, `main.cc`, `residence.cc`, `temp.txt`, `tile.cc`, `tileVertices.txt`, `vertices.h`, `backup.sv`

## Arguments

Input: `./ctor` (assume using `layout.txt`)

Output:

```
New Game starts!  
---- Game setup ----  
1 0 1 0 1 1
```

Input: `./ctor -load <loadFile>`

Output:

```
Loaded Game starts!  
1 0 1 0 1 1
```

Input: `./ctor -random-board`

Output:

```
y57qu@ubuntu2004-008:~/FinalProject/codeImplementation$ ./ctor -random-board  
New Game starts!  
---- Game setup ----  
1 0 1 0 1 1
```

Input: `./ctor -load <loadFile> -board <boardFile>`

Output:

when choose board:

```
y37q@ubuntu2004-000:~/FinalProject/codeImplementation$ ./ctor  
Only 'load' or 'board', choose again.  
board  
New Game starts!
```

when choose load:

```
y37q@ubuntu2004-000:~/FinalProject/codeImplementation$ ./ctor  
Only 'load' or 'board', choose again.  
load  
Loaded Game starts!
```

Input: `./ctor -load <loadFile> -board <boardFile> -random-board`

Output:

when choose board:

```
y37q@ubuntu2004-000:~/FinalProject/codeImplementation$ ./ctor  
Only 'load' or 'board', choose again.  
board  
New Game starts!
```

when choose load:

```
y37q@ubuntu2004-000:~/FinalProject/codeImplementation$ ./ctor  
Only 'load' or 'board', choose again.  
load  
Loaded Game starts!
```

Input: `./ctor -load <loadFile> -board <boardFile> -random-board -seed 123456`

Output:

when choose board:

```
y37q@ubuntu2004-000:~/FinalProject/codeImplementation$ ./ctor  
Only 'load' or 'board', choose again.  
board  
New Game starts!
```

when choose load:

```
y37q@ubuntu2004-000:~/FinalProject/code/implementation$ ./cto
Only 'load' or 'board', choose again.
load
Loaded Game starts!
```

All of them will have the board display as following:

```

      | 0 | -- 0 -- | 1 | | | | | | | | | | |
      | 1 |      0 | 2 |
      | 2 | -- 3 -- | 3 |      0 | 4 | -- 4 -- | 5 |
      | 5 |      1 | 6 |      2 | 8 |
| 6 | -- 9 -- | 7 | ENERGY | 8 | -- 10 -- | 9 | HEAT | 10 | -- 11 -- | 11 |
| 12 |      3 | 13 |      4 | 15 |      5 | 17 |
| 12 | ENERGY | 13 | -- 18 -- | 14 | HEAT | 15 | -- 19 -- | RB | 11 | 17 |
| 20 |      21 | 6 | 22 |      23 | 7 | 24 |      25 |
| 18 | -- 26 -- | BB | 3 | 20 | -- 27 -- | 21 | HEAT | 8 | 22 | -- 28 -- | YB |
| 29 |      8 | 30 |      9 | 32 |      10 | 34 |
| 24 | BRICK | 25 | -- 35 -- | 26 | 6 | 27 | -- 36 -- | BB | 8 | 29 |
| 37 |      38 | 11 | 39 |      40 | 12 | 41 |      42 |
| 30 | -- 43 -- | 0B | 12 | RB | -- 44 -- | 33 | ENERGY | 5 | 34 | -- 45 -- | 35 |
| 46 | 13 | 47 |      48 | 14 | 49 |      50 | 15 | 51 |
| 36 | WIFI | 37 | -- 52 -- | 38 | PARK | 39 | -- 53 -- | YB | 4 | 41 |
| 54 |      55 | 16 | 56 |      57 | 17 | 58 |      59 |
| 42 | -- 60 -- | 43 | WIFI | 6 | 0B | -- 61 -- | 45 | GLASS | 9 | 46 | -- 62 -- | 47 |
      | 63 |      64 | 18 | 65 |      66 |
      | 48 | -- 67 -- | 49 | 9 | 50 | -- 68 -- | 51 |
      | 69 |      70 |
      | 52 | -- 71 -- | 53 |
```

## Beginning of The Game

At the beginning of the game, each user can build two basements:

Success:

```

Builder BLUE, where do you want to build a basement?
3
BLUE has built: a basement at 3

```

Fail:

```

Builder RED, where do you want to build a basement?
3
You cannot build here. Try again!

```

After all builders have their two basements built, the board with all builders' basements will be displayed.

```

      | 0| -- 0--| 1|
      | 1 0 2
      | BRICK
      | 3
      | 4| -- 4--| RB|
      | 5 1 6 7 2 8
      | ENERGY HEAT
OB| -- 9--| 7| 10| 8| --10--| 9| 5| 10| --11--| 11|
12| 3 13 14 4 15 16 5 17
12| ENERGY 14 PARK 15 16 HEAT 17
12| 4 13| --18--| 14| 7 15| --19--| 16| 10| 17|
20 21 6 22 23 7 24 25
YB| --26--| 19| 11| 20| --27--| 21| 3| 22| --28--| 23|
29 8 30 31 9 32 33 10 34
24| HEAT 8 BB| --35--| 26| 2 27| --36--| 28| 6 RB|
37 38 11 39 40 12 41 42
30| --43--| 31| 8 32| --44--| 33| 12 34| --45--| 35|
46 13 47 48 14 49 50 15 51
36| ENERGY 37| --52--| 38| WIFI 11 OB| --53--| 40| GLASS 4 41|
54 55 16 56 57 17 58 59
42| --60--| 43| WIFI 6 44| --61--| 45| GLASS 9 46| --62--| 47|
63 64 18 65 66
48| --67--| YB| 9 50| --68--| 51|
69 70
52| --71--| 53|

```

# Start Each Turn

The board will be built with the most recent updated residences and edges and geese's location.

```
----- Game starts -----
| 0| -- 0--| 1| | | | | | | | |
| 1| 0| 2|
| 2| -- 3--| BB| 3| 4| -- 4--| RB|
| 5| 1| 6| 7| 2| 8|
| 0B| -- 9--| 7| ENERGY 10| 8| --10--| 9| HEAT 5| 10| --11--| 11|
| 12| 3| 13| 14| 4| 15| 16| 5| 17|
| 12| 4| 13| --18--| 14| PARK 7| 15| --19--| 16| HEAT 10| 17|
| 20| 21| 6| 22| 23| 7| 24| 25|
| YB| --26--| 19| GLASS 11| 20| --27--| 21| BRICK 3| 22| --28--| 23|
| 29| 8| 30| 31| 9| 32| 33| 10| 34|
| 24| 8| BB| --35--| 26| BRICK 2| 27| --36--| 28| BRICK 6| RB|
| 37| 38| 11| 39| 40| 12| 41| 42|
| 30| --43--| 31| ENERGY 8| 32| --44--| 33| WIFI 12| 34| --45--| 35|
| 46| 13| 47| 48| 14| 49| 50| 15| 51|
| 36| 5| 37| --52--| 38| WIFI 11| 0B| --53--| 40| GLASS 4| 41|
| 54| 55| 16| 56| 57| 17| 58| 59|
| 42| --60--| 43| WIFI 6| 44| --61--| 45| GLASS 9| 46| --62--| 47|
| 63| 64| 18| 65| 66|
| 48| --67--| YB| GLASS 9| 50| --68--| 51|
| 69| 70|
| 52| --71--| 53|
```

## Beginning of Turn

The player can choose to roll one of `fair`, `load` dice.

```
Builder BLUE's turn.
BLUE has 2 building points, 0 brick, 0 energy, 0 glass, 0 heat, and 0 WiFi.
Choose your dice and roll!
Commands: "load", "fair" and "roll".
```

`fair` dice:

```
Now you have loaded dice!  
fair  
Now you have fair dice!  
load
```

`load` dice:

```
Now you have fair dice!  
load  
Now you have loaded dice!
```

`roll`:

Each builder will gain resources if they have nearby residences.

load dice:

fair dice:

```
roll  
Input a roll between 2 and 12:  
2 8  
Rolled dice is 8 !  
Builder BLUE gained:  
1 HEAT  
Builder ORANGE gained:  
1 HEAT  
Builder ORANGE gained:  
1 ENERGY  
Builder RED gained:  
1 ENERGY
```

```
roll  
Rolled dice is 12 !  
Builder BLUE gained:  
1 WIFI  
Builder YELLOW gained:  
1 WIFI
```

Invalid command:

```
Invalid Command! Try again with "load", "fair" or "roll"
```

## During the Turn

```
1 ENERGY  
----- Game during the turn -----  
board
```

The player can choose any of the commands

- `board`

```

board
      | 0|-- 0--| 1|
      | 1 0 2|
      | 2|-- 3--|BB| 3 | 4|-- 4--|RB|
      | 5 1 6|
      | 7 2 8|
|0B|-- 9--| 7| 10 | 8|--10--| 9| 5 |10|--11--|11|
|12 3 13| 14 4 15| 16 5 17|
|12| 4 |13|--18--|14| 7 |15|--19--|16| 10 |17|
|20 21 6 22| 23 7 24| 25|
|YB|--26--|19| 11 |20|--27--|21| 3 |22|--28--|23|
|29 8 30| 31 9 32| 33 10 34|
|24| 8 |BB|--35--|26| 2 |27|--36--|28| 6 |RB|
|37 38 11 39| 40 12 41| 42|
|30|--43--|31| 8 |32|--44--|33| 12 |34|--45--|35|
|46 13 47| 48 14 49| 50 15 51|
|36| 5 |37|--52--|38| 11 |OB|--53--|40| 4 |41|
|54 55 16 56| 57 17 58| 59|
|42|--60--|43| 6 |44|--61--|45| 9 |46|--62--|47|
| 63 64 18 65| 66|
|48|--67--|YB| 9 |50|--68--|51|
| 69 70|
|52|--71--|53|

```

- status

```

status
BLUE has 2 building points, 0 brick, 0 energy, 0 glass, 1 heat, and 0 WiFi.
RED has 2 building points, 0 brick, 1 energy, 0 glass, 0 heat, and 0 WiFi.
ORANGE has 2 building points, 0 brick, 1 energy, 0 glass, 1 heat, and 0 WiFi.
YELLOW has 2 building points, 0 brick, 0 energy, 0 glass, 0 heat, and 0 WiFi.

```

- residences

```

residences
BLUE has built:
  3 B
 25 B

```

- `build-road`

If you build on an unavailable edge:

```
build-road 57
You cannot build here.
```

If you do not have enough resources to build a road

```
build-road 9
You do not have enough resources.
```

Successfully build a road:

```
build-road 21
BLUE has built: a road at 21
```

- `build-res`

If you build on an unavailable vertex:

```
build-res 23
You cannot build here.
```

If you do not have enough resources:

```
build-res 7
You do not have enough resources.
```

Successfully build a basement



```
BLUE has built: a road at 20  
build-res 12  
BLUE has built: a basement at 12
```

- `improve <housing#>`

improve from level 0 to level 1

```
improve 12  
The residence at 12 is now a H
```

Improve from level 1 to level 2

```
improve 12  
The residence at 12 is now a T
```

Fail to improve to a higher level (Extra feature)

```
improve 12  
The residence is at the highest level.
```

Attempting to improve on a vertex that does not have a residence of your own

```
The residence at 12 is now a T  
improve 13  
You do not have a residence at 13.
```

- `trade <colour> <give> <take>`

Accepting an offer

```
trade 1 4 3  
¿ BLUE offers RED one WIFI for one HEAT.  
Does RED accept this offer?  
¿ yes  
Builder BLUE gained: 1 HEAT, lose 1 WIFI  
Builder RED gained: 1 WIFI, lose 1 HEAT
```

Not accepting an offer

```
trade 1 4 3
? BLUE offers RED one WIFI for one HEAT.
Does RED accept this offer?
? no
No builders gained resources.
```

Accepting but do not have enough resource to trade (Extra Feature)

```
trade 1 4 3
? BLUE offers RED one WIFI for one HEAT.
Does RED accept this offer?
? yes
You do not have enough resources to trade.
```

- `next`

```
next
----- Move to the next turn -----
```

- `save <file>`

```
save save1
File saved at save1.
```

- `help`

```
save save1
File saved at save1.
help
Valid commands:
board
status
residences
build-road <edge#>
build-res <housing#>
improve <housing#>
trade <colour> <give> <take>
next
save <file>
help
```

- When reached end of file

```
File saved at backup.sv.
terminate called without an active exception
Aborted
```

## End of Game

---

Ask the player if they want to play again.

```
next
Congratulations! You win!
Would you like to play again?
;
```

If yes

```

New Game starts!
----- Game setup -----
      | 0 | -- 0 -- | 1 | | |
      | 1 |      | 2 |
      | 0 |      | 3 |
      | 2 | -- 3 -- | 3 |
      | 5 |      | 6 |
      | 1 |      | 7 |
      | 10 |     | 8 |
      | 6 | -- 9 -- | 7 |
      | 12 | 3 | 13 |
      | 12 | 4 | 13 | -- 18 -- | 14 |
      | 20 | 21 | 6 | 22 |
      | 18 | -- 26 -- | 19 |
      | 29 | 8 | 30 |
      | 24 | 8 | 25 | -- 35 -- | 26 |
      | 37 | 38 | 11 | 39 |
      | 30 | -- 43 -- | 31 |
      | 46 | 13 | 47 |
      | 36 | 5 | 37 | -- 52 -- | 38 |
      | 54 | 55 | 16 | 56 |
      | 42 | -- 60 -- | 43 |
      | 63 | 64 | 18 | 65 |
      | 48 | -- 67 -- | 49 |
      | 69 | 70 |
      | 52 | -- 71 -- | 53 |

      BRICK
      3

      ENERGY
      1

      HEAT
      2

      PARK
      4

      GEESSE
      7

      GLASS
      6

      BRICK
      3

      HEAT
      5

      BRICK
      10

      BRICK
      6

      ENERGY
      8

      WIFI
      12

      GLASS
      4

      WIFI
      9

      GLASS
      9

```

If no

```

Congratulations! You win!
Would you like to play again?
? no
Bye!
v37cu@ubuntu2004-008:~/finalProject/codeImplementation

```