CS 246 Game of Constructor Demo Plan

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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:

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

Output:

Input: `./ctor -random-board`

Output:

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

Output:

when choose board:

```
Only 'load' or 'board', choose again.
board
New Game starts!
```

when choose load:

```
y37qu@ubuntu2004-003.~/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:

```
Only 'load' or 'board', choose again.
board
New Game starts!
```

when choose load:

```
y37qu@ubuntu2004-003.~/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:

```
Only 'load' or 'board', choose again.
board
New Game starts!
```

when choose load:

```
y37qu@ubuntu2004-005.%/FinalProject/codeImplementation$ ./etor
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
                          |  BRICK  |
              | 2|-- 3--| 3|   3   | 4|-- 4--| 5|
              |         |         |         |
              5    1    6         7    2    8
              |  ENERGY |         |  HEAT   |
| 6|-- 9--| 7|   10  | 8|--10--| 9|   5   |10|--11--|11|
|         |              |         |              |         |
12   3   13             14   4   15             16   5   17
|  ENERGY |              |  HEAT   |              |  GLASS  |
|12|   4  |13|--18--|14|  10  |15|--19--|RB|  11  |17|
|         |              |         |              |         |
20       21   6   22             23   7   24             25
|         |  BRICK  |              |  HEAT   |              |
|18|--26--|BB|   3  |20|--27--|21|   8  |22|--28--|YB|
|         |              |         |  GEESE  |              |
29   8   30             31   9   32             33  10   34
|  BRICK  |              |  BRICK  |              |  ENERGY |
|24|   2  |25|--35--|26|   6  |27|--36--|BB|   8  |29|
|         |              |         |              |         |
37       38  11   39             40  12   41             42
|         |  WIFI   |              |  ENERGY |              |
|30|--43--|OB|  12  |RB|--44--|33|   5  |34|--45--|35|
|         |              |         |              |         |
46  13   47             48  14   49             50  15   51
|  WIFI   |              |  PARK   |              |  GLASS  |
|36|  11  |37|--52--|38|   7  |39|--53--|YB|   4  |41|
|         |              |         |              |         |
54       55  16   56             57  17   58             59
|         |  WIFI   |              |  GLASS  |              |
|42|--60--|43|   6  |OB|--61--|45|   9  |46|--62--|47|
                    |         |              |         |
                   63        64  18   65             66
                    |         |  GLASS  |              |
                   |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  |
            | 2|-- 3--|BB|   3  | 4|-- 4--|RB|
            |            |        |            |
            5    1    6            7    2    8
            |  ENERGY |            |  HEAT   |
0B|-- 9--| 7|   10  | 8|--10--| 9|   5  |10|--11--|11|
 |            |        |        |        |            |
12    3   13          14    4   15          16    5   17
 |  ENERGY |            |  PARK   |            |  HEAT   |
12|    4  |13|--18--|14|   7  |15|--19--|16|   10  |17|
 |            |        |  GEESE  |        |            |
20          21    6   22          23    7   24          25
 |            |  GLASS  |            |  BRICK  |            |
YB|--26--|19|   11  |20|--27--|21|   3  |22|--28--|23|
 |            |        |        |        |            |
29    8   30          31    9   32          33   10   34
 |  HEAT   |            |  BRICK  |            |  BRICK  |
24|    8  |BB|--35--|26|   2  |27|--36--|28|   6  |RB|
 |            |        |        |        |            |
37          38   11   39          40   12   41          42
 |            |  ENERGY |            |  WIFI   |            |
30|--43--|31|    8  |32|--44--|33|   12  |34|--45--|35|
 |            |        |        |        |            |
46   13   47          48   14   49          50   15   51
 |  ENERGY |            |  WIFI   |            |  GLASS  |
36|    5  |37|--52--|38|   11  |0B|--53--|40|   4  |41|
 |            |        |        |        |            |
54          55   16   56          57   17   58          59
 |            |  WIFI   |            |  GLASS  |            |
42|--60--|43|    6  |44|--61--|45|   9  |46|--62--|47|
 |            |        |        |        |            |
            63          64   18   65          66
            |            |  GLASS  |            |
            |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
                        |   BRICK   |
              | 2|-- 3--|BB|    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
      |  ENERGY |           |  PARK   |           |  HEAT   |
      |12|    4  |13|--18--|14|    7  |15|--19--|16|   10  |17|
      |         |           |  GEESE  |           |         |
      20       21    6   22          23    7   24          25
      |         |  GLASS  |           |  BRICK  |           |
      |YB|--26--|19|   11  |20|--27--|21|    3  |22|--28--|23|
      |         |           |           |         |         |
      29    8   30          31    9   32          33   10   34
      |  HEAT   |           |  BRICK  |           |  BRICK  |
      |24|    8  |BB|--35--|26|    2  |27|--36--|28|    6  |RB|
      |         |           |           |         |         |
      37       38   11   39          40   12   41          42
      |         |  ENERGY |           |  WIFI   |           |
      |30|--43--|31|    8  |32|--44--|33|   12  |34|--45--|35|
      |         |           |           |         |         |
      46   13   47          48   14   49          50   15   51
      |  ENERGY |           |  WIFI   |           |  GLASS  |
      |36|    5  |37|--52--|38|   11  |OB|--53--|40|    4  |41|
      |         |           |           |         |         |
      54       55   16   56          57   17   58          59
      |         |  WIFI   |           |  GLASS  |           |
      |42|--60--|43|    6  |44|--61--|45|    9  |46|--62--|47|
      |         |           |           |         |
      63          64   18   65          66
      |           |  GLASS  |           |
      |48|--67--|YB|    9  |50|--68--|51|
      |         |           |
      69          70
      |           |
      |52|--71--|53|
```

Beginning of Turn

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

```
                  |52|  71  |53|
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:

```
fair
Now you have fair dice!
```

`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:
¿ 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

```
----- Game during the turn -----
```

The player can choose any of the commands

- `board`

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

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

If no

```
Congratulations! You win!
Would you like to play again?
¿ no
 Bye!
v37gu@ubuntu2004-008:~/finalProject/codeImplementation
```