

First Assignment

Description of the exercise:

N. 4: Simulate a simplified Capital game. There are some players with different strategies, and a cyclical board with several fields. Players can move around the board, by moving forward with the amount they rolled with a dice. A field can be a property, service, or lucky field. A property can be bought for 1000, and stepping on it the next time the player can build a house on it for 4000. If a player steps on a property field which is owned by somebody else, the player should pay to the owner 500, if there is no house on the field, or 2000, if there is a house on it. Stepping on a service field, the player should pay to the bank (the amount of money is a parameter of the field). Stepping on a lucky field, the player gets some money (the amount is defined as a parameter of the field).

There are three different kind of strategies exist. Initially, every player has 10000.

Greedy player: If he steps on an unowned property, or his own property without a house, he starts buying it, if he has enough money for it.

Careful player: he buys in a round only for at most half the amount of his money.

Tactical player: he skips each second chance when he could buy.

If a player has to pay, but he runs out of money because of this, he loses. In this case, his properties are lost, and become free to buy.

Read the parameters of the game from a text file. This file defines the number of fields, and then defines them. We know about all fields: the type. If a field is a service or lucky field, the cost of it is also defined. After the these parameters, the file tells the number of the players, and then enumerates the players with their names and strategies. In order to prepare the program for testing, make it possible to the program to read the roll dices from the file.

~~Task~~ *Print out which player won the game, and how rich he is (balance, owned properties).*

Short description how to use my program (user doc)

My program read the parameters of the game from a text file.

Sample input.txt:

```
4 // The number of fields
property // Then we list the fields
service 1000 //if it is a service or a luckyfield , you also have to give the costs
luckyfield 500
property
4 // The number of players and then list the players
JonSnow Tactical
AryaStark Greedy
DaenerysTargaryen Careful
SansaStark Greedy

// Now we read the dice
3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3 3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3
3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3
3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3
3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3
```

Sample output:

The winner is: AryaStark who is a GreedyPlayer , he/she have 34000 money left and owned 1 properties.

Another Sample input.txt:

```
2
property
service 9000
2
Alice Greedy
Bran Greedy

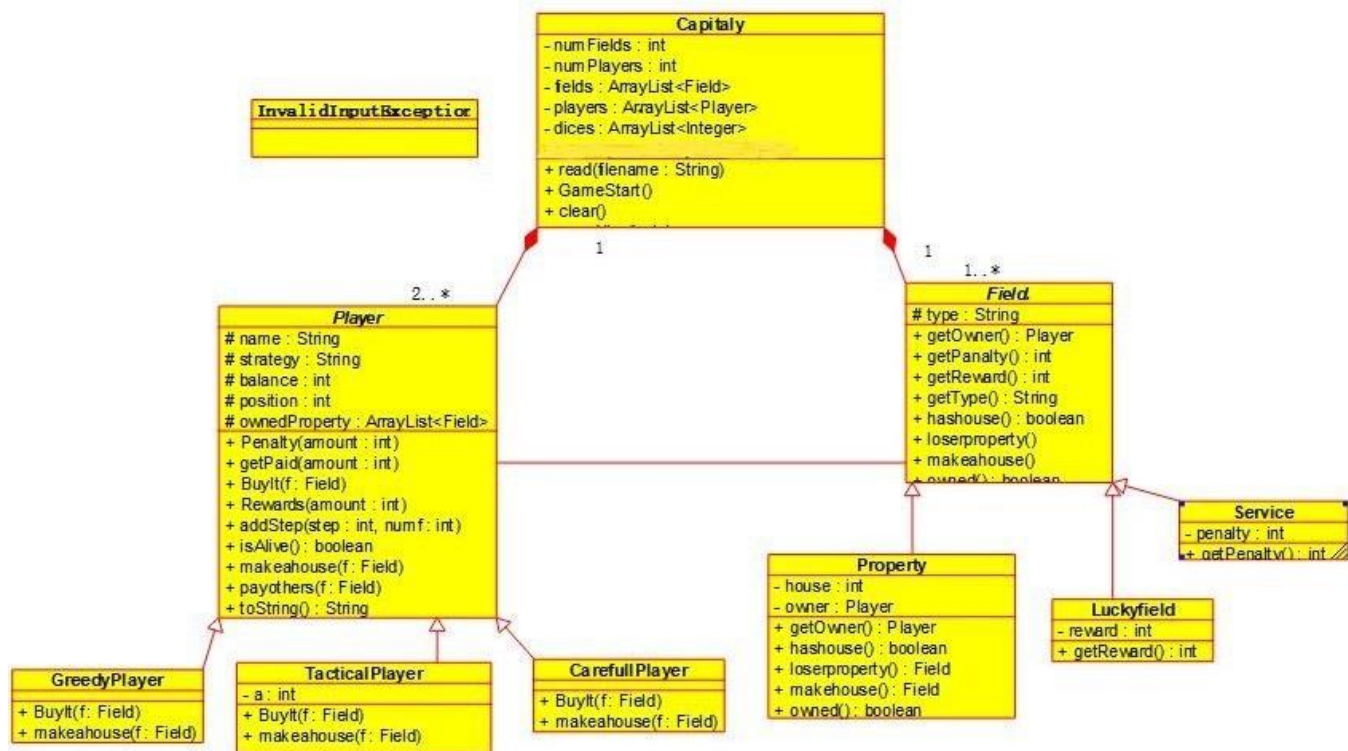
1 1 2 1 2 1 2 1
```

Sample output:

The winner is: Alice who is a GreedyPlayer , he/she have 6000 money left and owned 1 properties

So you can simply change the text file and it will Print out which player won the game, and how rich he is (balance, owned properties) in the case.

UML class diagram



List of test cases :

case1:

12

property

service 2500

luckyfield 150

property

property

property

property

property

property

luckyfield 100

service 3000

property

4

JonSnow Tactical

AryaStark Greedy

DaenerysTargaryen Careful

SansaStark Greedy

5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2
5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2
5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2
5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2

Output: The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 7450
money left and owned 4 properties

Case2:

8

property

service 1500

luckyfield 150

property

property

luckyfield 100

service 3000

property

4

JonSnow Tactical

AryaStark Greedy

DaenerysTargaryen Careful

SansaStark Greedy

3 6 2 1 4 5 1 3 5 6 2 4 3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 6 2 4 3 6 4 3 2 1 6 2 1 4 5 1 5 6 2 4
3 6 2 1 4 5 1 3 5 6 2 4 2 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 4 6 4 1 1 4 5 1 3 5 4 6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 2 3 6
4 1 2 1 4 5 1 5 6 2 4 3 6 2 1 4 5 5 2 4 2 4 3 2 1 6 5 4 6 4 1 6 2 1 4 5 1
6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 4 6 4 1 6 2 1 4 5 1 5 3 6 4 1 2

Output The winner is: SansaStark who is a GreedyPlayer , he/she have 400 money left
and owned 3 properties

Case 3 :

4

property

service 1000

luckyfield 500

property

4

JonSnow Tactical

AryaStark Greedy

DaenerysTargaryen Careful

SansaStark Greedy

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3 3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

Output: The winner is: AryaStark who is a GreedyPlayer , he/she have 17500 money left
and owned 1 properties

Case4:

11

property

service 2500

property

property

property

property

property
property
luckyfield 100
service 3000
property
5
Yuki Tactical
JonSnow Tactical
AryaStark Greedy
DaenerysTargaryen Careful
SansaStark Greedy

4 2 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 4 6 4 1 1 4 5 1 3 5 4 6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 2 3 6
4 1 2 1 4 5 1 5 6 2 4 3 6 2 1 4 5 5 2 4 2 4 3 2 1 6 5 4 6 4 1 6 2 1
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6

Output: The winner is: JonSnow who is a TacticalPlayer , he/she have 1200 money left
and owned 1 properties

Case5:

6
property
service 1500
luckyfield 150
property
property
luckyfield 100
3
JonSnow Tactical
AryaStark Greedy
DaenerysTargaryen Careful

3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5
3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2
5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2
4 2 1 2 3
3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2

Output: The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 2200 money left and owned 4 properties

Case6:

16

property

service 2500

luckyfield 150

property

property

property

property

service 2500

luckyfield 150

property

property

property

property

luckyfield 100

service 3000

property

4

JonSnow Tactical

AryaStark Greedy

DaenerysTargaryen Careful

SansaStark Greedy

5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5

3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2

5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5

2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2

5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5

2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3 3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3 2 2 1 1 1 2 4 4 2 6

6 4 2 1 2 3 3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

3 2 5 1 2 2 1 1 1 2 4 4 2 6 6 4 2 1 2 3

Output: The winner is: The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 2700 money left and owned 7 properties

Case7:

4

property

service 1000

luckyfield 500

property

3

JonSnow Tactical

AryaStark Greedy

DaenerysTargaryen Careful

3 2 5 1 2 2 1 5 1 3 5 6 2 4 3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 6 2 4 3 6 4 3 2 1 6 2 1 4 5 1 5 6 2 4
3 6 2 1 4 5 1 3 5 6 2 4 2 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 4 6 4 1 1 4 5 1 3 5 4 6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 2 3 6
4 1 2 1 4 5 1 5 6 2 4 3 6 2 1 4 5 5 2 4 2 4 3 2 1 6 5 4 6 4 1 6 2 1 4 5 1
6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 4 3 2 1 6 2 1 4 5 1

Output: The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 13000 money left and owned 1 properties

Case8:

14

property

service 2500

property

property

property

luckyfield 100

property

service 2500

luckyfield 150

property

property

property
service 3000
property
4
JonSnow Tactical
AryaStark Greedy
DaenerysTargaryen Careful
SansaStark Greedy
6 2 4 2 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 4 5 1 3 5 4 6 4 1 1 4 5 1 3 5 4 6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 2 3 6
4 1 2 1 4 5 1 5 6 2 4 3 6 2 1 4 5 5 2 4 2 4 3 2 1 6 5 4 6 4 1 6 2 1 4 5 1
6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6 4 3 2 1 6 2 1 4 5 1 5 3 6 4 1 2 6 2 4 3 6 4 1 2 3 6 4 1 2
3 6 2 1 4 5 1 3 5 6 2 4 2 1 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5
2 3 6 2 5 2 1 2 3 6 4 5 2 5 4 6 3 2 1 6 5 2 3 1 4 3 2 4 1 2 5 3 6 5 2 1 4 5 2 3 6 2 5 2 1 2 3 6 4 5

Output The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 1900 money left and owned 5 properties

Case9:

14
property
property
luckyfield 100
service 3000
property
property
property
property
property
property
property
luckyfield 100
service 3000
property
6
JonSnow Tactical
AryaStark Greedy
DaenerysTargaryen Careful
SansaStark Greedy
Yuki Greedy
Alice Careful

36214513562436214513562421451356243643216214515624
362145135624243216214515364126243641236412
362145135
36214513562436214513562421451356243643216214515624
362145135624243216214515364126243641236412
36214513562421451354641145135464321214513562436236
4121451562436214552424321654641621451
64321 21451356243643216214515364126243641236412
36214513562421451354641621451536412624214513546411451
3546432121451356243623653652145236252123645254632165231432412
5365214523625212364525463216523143241253652145
236252123645254632165231
4121451562436214552424321654641621451
64321 21451356243643216214515364126243641236412
36214513562421451354641621451536412

Output: The winner is: AryaStark who is a GreedyPlayer , he/she have 2100 money left
and owned 4 properties

Case10:

7

property

service 1500

luckyfield 150

property

luckyfield 100

service 3000

property

3

JonSnow Tactical

DaenerysTargaryen Careful

SansaStark Greedy

243216214515364126243641236412
36214513562421451354641145135464321214513562436236
4121451562436214552424321654641621451
64321 21451356243643216214515364126243641236412
362145135624214552424321654641621451
64321 21451356243614552424321654641621451

6 4 3 2 1 2 1 4 5 1 3 5 6 2 4 3 6

Output: The winner is: DaenerysTargaryen who is a CarefulPlayer , he/she have 1750 money left and owned 2 properties

case 11:

2
property
service 9000
2
Alice Greedy
Bran Greedy

1 1 2 1 2 1 2 1

Output: The winner is: Alice who is a GreedyPlayer , he/she have 6000 money left and owned 1 properties