

IT2030 – Object Oriented Programming**Semester 1, 2021**

Assignment submission link is visible only for **24 hours**. Make sure to submit within the given period.

This is an individual assignment.

Assignment is given 100 marks.

This assignment covers **basic Java concepts, OOP concepts, array manipulation, string manipulation and exceptions handling**.

Your code needs to be executed with no compilation errors.

You can test your code for the sample outputs we have provided at the end of the assignment.

Submission guidelines

Assignment is **opened from 5.00 pm on 10th September 2021 till 5.00 pm on 11th September 2021** and the submission link is available in the SLIIT Courseweb page.

Please upload the Notepad file by following the below instructions.

1. You can use any IDE or online tool like repl or any text pad to build your solution.
2. Once you complete your solution, you must copy each class one by one, one after the other (order doesn't matter) to a single notepad file.
3. This single file may or may not contain some compilation errors due to copy and pasting all in to one file, which is acceptable.
4. After getting all the relevant classes and their implementations in to one file, rename that file as <your student registration number>.java
5. Add student name, Student registration number and the batch as the comments on top of the file.
6. refer the course web page and upload the file in to the correct link.

Students are strictly advised to following the submission guidelines.

Any student answer which is not following the correct instructions when submitting, will not be assessed.

"GradeScope" tool will be used to detect plagiarism and Plagiarism will be penalized.

Good coding practices (eg, code indentation, comments, line spacing, naming conventions, etc.) must be adhered.

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“TechSavvy” is a IT company that introducing novel game applications mainly using Java technologies. After several initial discussions, “TechSavvy” is introducing a new game called “Dot hunter”, which you will be contributing as a developer. After some brainstorming session between the development team and Project manager, they have agreed upon the below set of functionalities to be delivered. Below mentioned features will be delivering at phase 1 release and once the beta version released, company will be adding more functionalities to the game.

The main idea of the “Dot hunter” is to hunt all the dots in the maze. Payer controls the hunter through the maze hunting dots and super dots. Three soldiers walking in the maze, trying to get down the hunter. Randomly in the maze, there are super dots, which provides a super power and when hunter hunts super dots, he can shoot the soldiers and get them down.

Hunter has to hunt down all the dots and the super dots before any of the soldier catches him.

Description of functionalities

Hunter is created from animation where he/she have a name, different color where the player can select according to their preferences. The hunter position will be determined by the X and Y coordinates. And based on that, hunter direction will be determined. When player use up, down left and right arrow keys, hunter will move. If he/she hits the wall (Wall boundary will be 250 for x axis and 360 for Y axis which is a fixed size in the GUI), a sound will be raised as “Öh oo!!”.

Sound “Oh oo!!” should be generated as a custom exception called “SoundException” and as the exception message, the sound should be displayed.

While walking, in each step, hunter will hunt the dots. Hunt method will accept an object from class “Board”. Depending on the dot type, each dot count will be reduced. If he hunts all the 97 dots and the 3 super dots, he wins, and game should be end.

While hunter is hunting down the dots, three soldiers walking in the maze, trying to get down the hunter. All soldiers are having a x and y coordinates, but they differ from the colour. One is green, other is red and remaining is a blue soldier. Soldier can hunt down the hunter, but with a unique way. Using a knife, using the hand, using a gun are the unique ways respectively for green, red and blue soldiers. Having a special ability of getting down a hunter. When a soldier kills hunter, the game is over.

When the game starts, the Board should be ready with fixed number of dots and super dots, the dot type, with a hunter and three soldiers. The choice of three soldier will be randomly assigned when the game starts. Hence the board should be able to accept any type of three soldiers.

Assign the coordinates for hunter and soldiers will happen in a separate method call init and this should be automatically call when the board is ready.

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When setting the coordinates, initial positions of the hunter will be always (0,0), but three soldiers x and y coordinates also will be generated randomly by the time it starts using for loop.

Below is the main app implementation and the console output for your reference:

```

1 import java.util.Scanner;
2 public class MainApp {
3     public static void main(String[] args) {
4         Scanner sc=new Scanner(System.in);
5         Hunter myhunetr =new Hunter("Maha Deva","Brown");
6         soldier threeSoldiers[]={new RedSoldier(),new RedSoldier(),new GreenSoldier()};
7         Board myboard =new Board("superDot", myhunetr,threeSoldiers );
8
9         System.out.println("Use the keyboard up,down,left ,right arrow keys to move the hunter");
10        myhunetr.setXPOS(sc.nextInt());
11        myhunetr.setYPOS(sc.nextInt());
12        myhunetr.move(myhunetr);
13        myhunetr.hunt(myboard);
14        threeSoldiers[2].hunt();
15    }
16 }
17 }
18

```

Problems @ Javadoc Declaration Console

<terminated> MainApp [Java Application] C:\Program Files\Java\jre1.8.0_261\bin\javaw.exe (Sep 5, 2021, 12:13:11 AM)

Board is ready and three soldiers and the hunter is positioned in the board
 Use the keyboard up,down,left ,right arrow keys to move the hunter
 12
 13
 Hunter is moving, X:12 Y:13
 Hunting super dots
 Killed using a knife
 Game over

Mark Distribution

Description	Mark
Basic Java concepts	15 marks
OOP concepts	15 marks
Java specific concepts	10 marks
Usage of keywords	05 marks

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String manipulations	05 marks
Exception Handling	10 marks
Array manipulations	05 marks
Correct Calculations	15 marks
Displaying details	15 marks
Compile, Following Coding standards, Overall completeness	05 marks