

COMP 1029 – Programming Paradigms

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Java Coursework Report

To start off, I learned a lot whilst working on this Java coursework. I gained very meaningful knowledge on how to apply Object Oriented Programming into my code. Learning how to use inheritance, polymorphism, and method overloading. Applying theoretical knowledge learnt from the classroom to the coursework. After learning the C programming language, I felt like there was a big difference in coding in Java compared to C. But after completing the coursework, I really enjoyed learning a new programming language. I would like to thank Ms. Doreen as well for providing very critical and effective feedback which I used to improve my work.

The challenges I faced when completing this coursework was implementing Object Oriented Programming. I had issues understanding how to implement inheritance into my code. After being able to fully understand how OOP works in Java, I was able to successfully implement inheritance, polymorphism and method overloading in my code.

Overall, this was a very insightful coursework. I was able to experience using OOP which is important in software development, and I found this coursework very fulfilling as I was able to finish it ahead of schedule.

My assumptions doing this coursework is that the user can move freely around the hospital, given that the user is 1 meter or more away from all 4 directions, the user has the freedom to move and go to as many areas in the hospital as they wish. There is no restriction set on the user if they are deemed as normal contact. However, if the user is deemed casual contact or high risk, there are restrictions and rules imposed. My rules for contact status is that if the users entered distance is < 0.5 then it is High Risk, between 0.5 and 1.0 then it is Casual Contact and if > 1.0 then is Normal.

My code has 3 classes. These classes are Restricted_Spots, Static_Distancing, and Dynamic_Distancing.

Class 1: Restricted Spots

Within the Restricted_Spots class, here is where all the 6 different areas in my program are initialized. I created another class called 'Area' which is a nested class. In the Area class include the instance variables for each of the Area's attributes. Nested inside the 'Area' class is a constructor which takes in 5 arguments, and it initializes each of the instance variables for the 'Area' class. As for the random number generator, I used `math.random` and used it to generate a random number of people inside the area, the ranges are from 0 to `SpotMaximumCapacity`. As for `SpotMaximumCapacity`, I divided `SpotArea` by 4 as there are 4 directions of 1 meter. Following is a method called 'permission' which determines whether the user will be able to enter the Area or not, it takes 2 parameters and uses an if else block and the value returned will be used in the Static_Distancing class to overall determine entrance or not. The 'display' method prints out each of the Area's attributes as well as my Student ID and Name. In addition, it prints out the current date and time. To print out the

Date and Time, I imported 3 packages and formatted the date and time to be more readable. `ofPattern` is a method of `DateTimeFormatter` that allows me to create my own pattern for the date and time. Then I have 6 different subclasses which inherits from parent class 'Area', each of the 6 classes uses the 'extends' keyword to indicate inheritance and on top of that, I utilized the 'super' keyword which allowed me to set the specified values of the subclass by overriding the constructor, here I utilized another OOP method which is Polymorphism.

As for the access modifier is all public because the methods are accessed from the Static Distancing class. For the permission method, it is public static int because it returns an integer value depending on the if else block. For the display method, it is public static void because there is no return value.

Class 2: Dynamic Distancing

Moving on to the `Dynamic_Distancing` class, this is the class where I determine the dynamic distancing in the 4 directions, user's contact status, user's mask rules and clinic appointment. **My 3 extraordinary features are: user's mask rules, clinic appointment, and FindShortestDistance method.** User's mask rules and clinic appointment utilize the `FindShortestDistance` method which finds the shortest distance from 4 directions. The `Direction` nested class takes in 4 parameters from 4 directions and uses a series of if blocks to determine the distance between the user and other individuals in the area. Given that the user enters a distance less than 1 meter, the series of if blocks calculate how much the user will need to move away to practice dynamic distancing. Moving on to the `Contact Status` method, it takes in 4 parameters as well from 4 different directions. There is an array of 3 strings which are used when printing out the contact status within a series of if else blocks to determine contact status. The array is accessed by indexing. ANSI color escape sequence is also used here to add some color to the strings printed to signify importance. Following, there is another method called `contact status` which takes in 1 parameter, this method is used to display mask rules for the user. This method utilizes method overloading as there are 2 methods with the same name but different number of parameters. The parameter passed into this method is the return value from `FindShortestDistance`. Then finally the `Clinic Appointment` method uses a random date generator to generate a random date for the user to attend a hospital appointment based on their distance and a series of if else blocks. It utilizes the `LocalDate` package to get the current year, month, and day.

As for the `Contact Rules`, if any of the entered distance is less than 0.5 meters, then the contact status will be determined as High Risk. If the entered distance is between 0.5 and 1 meter, then the contact status will be determined as Casual Contact. And if the entered distance is over or equal to 1 meter, then the contact status will be determined as Normal. These rules apply for dynamic distancing in the 4 directions, user's contact status, user's mask rules and clinic appointment.

For the methods `Direction`, `Contact Status` (4 parameters), `Contact Status` (1 parameter), and `clinic appointment`. They are all public static void as they have no return value. But for `FindShortestDistance`, it has a floating-point return value hence it is public static float. The access modifier is all public because the methods are accessed from the Static Distancing class.

Class 3: Static Distancing

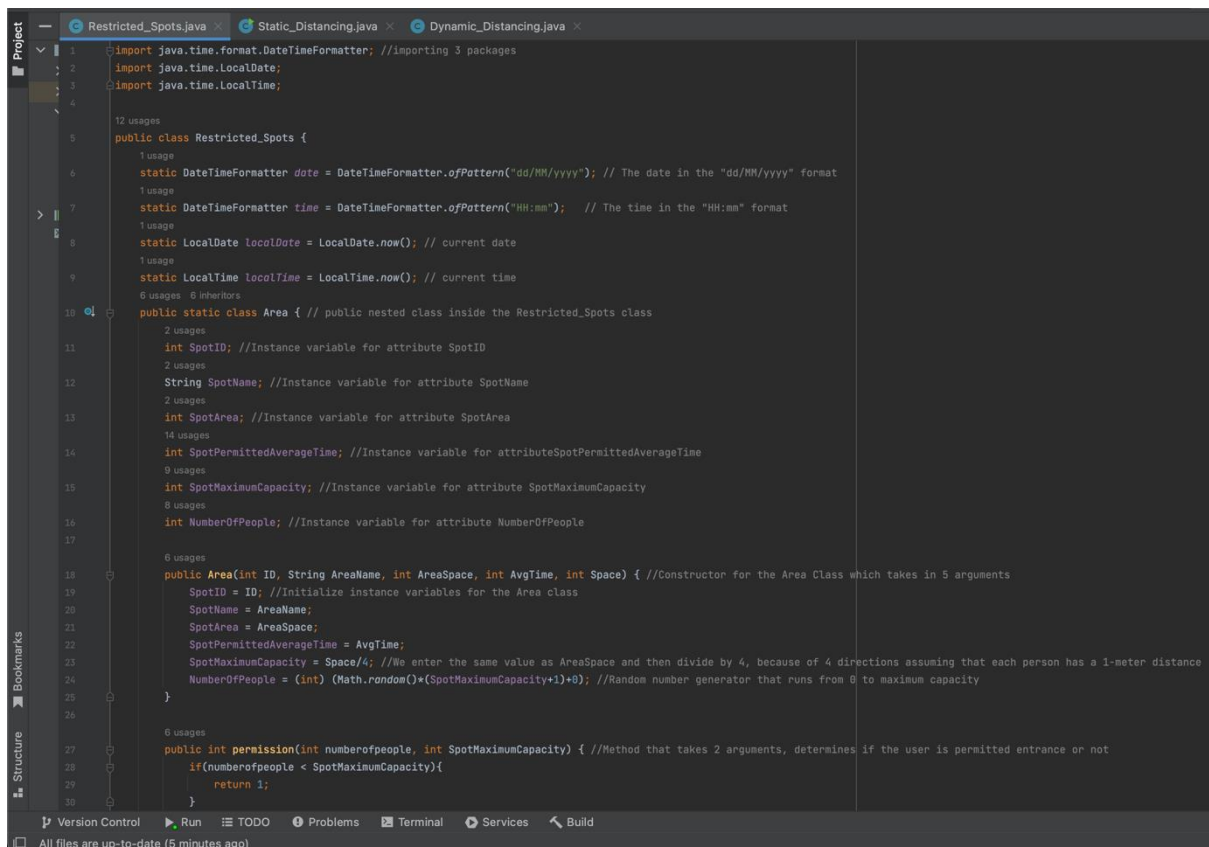
Moving onto the Static Distancing class, here is where main is located. I utilized inheritance by using the 'extend' keyword, where the SD subclass inherits the Dynamic Distancing class, so within main, methods will be called from SD. Within main, there is a switch that is used to allow the user to choose their desired area to enter. Before the switch, I used a do-while loop to create a loop with a condition that will only continue given that the while condition is satisfied. The switch has 7 choices, the first 6 are the areas of the hospital and the last choice is exit, there is also a default case which is added. I used the "" syntax to create a multi-line string for easier reading when printing the 7 choices. I imported the scanner object and used scanner to take in user input for the switch and the do-while loop. For each of the 6 cases, I created an object of the Area class from Restricted_Spots. By creating this object, it allowed me to access the methods in the class and utilize it in main. There is then an 'if' statement that checks if permission is permitted to enter the area or not. If the user is permitted to enter the area, it means that the area is not full and then the system will proceed to ask the user to enter the distance between them and the person to their front, back, left, and right. This and the other methods are from the SD subclass which are inherited from Dynamic Distancing. This method will then return the distances that the user will need to move in the relevant directions given that any of the distances is less than 1 meter. Continuing, Contact Status method is called here using the 4 parameters, this method returns the 'Contact Status' of the user. The next method is also Contact Status, but this is using method overloading, it uses the FindShortestDistance return value as a parameter and determines the 'Mask Rules' for the user. The final method called is Clinic Appointment which also uses the FindShortestDistance return value as a parameter and uses a random date generator to book a hospital checkup appointment for the user depending on their contact status.

However, given that the area is full, the system will ask the user to wait and ask for their response. If the user does choose to wait, then the system will assume that the SpotPermittedAverageTime has passed, and the user can enter. Then the functions inherited by SD from Dynamic Distancing class will then all be called.

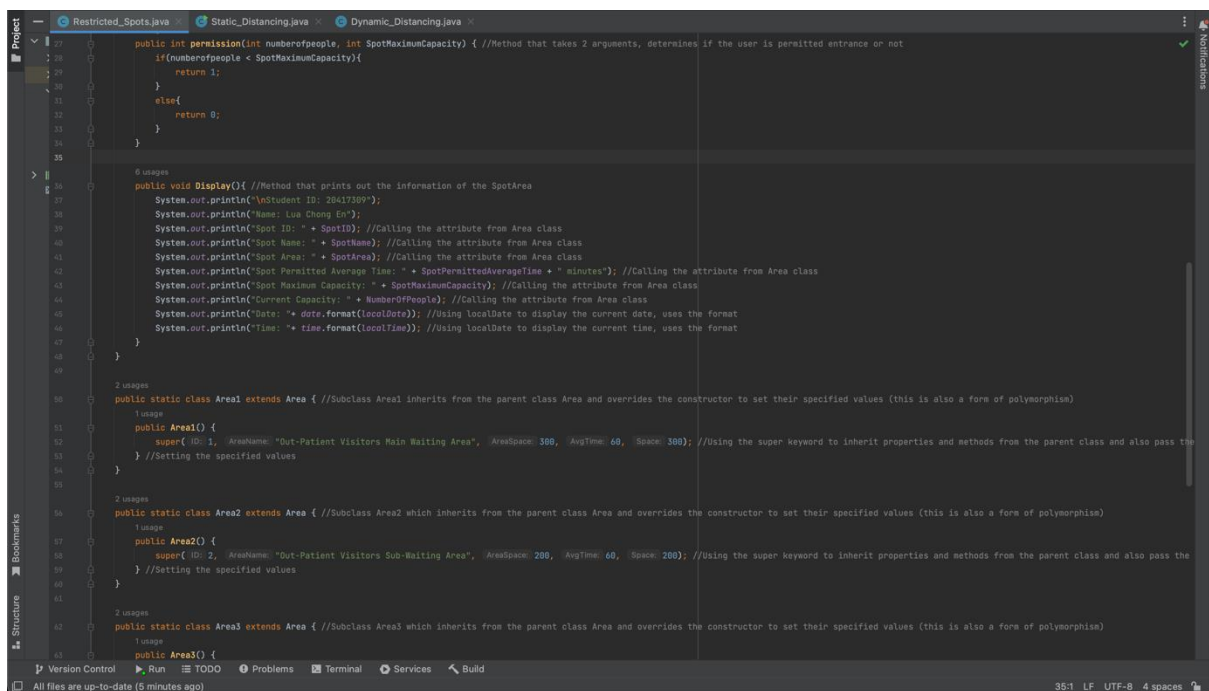
At the end of the switch case, the system will ask if the user wants to enter another area of the hospital and take in user input. The while condition will take in the input and determine to either continue or end the loop which will end the program. I utilized the object.equals to help determine if the input by the user is valid or not.

Code Screenshots with Comments

Class 1: Restricted Spots



```
1 import java.time.format.DateTimeFormatter; //importing 3 packages
2 import java.time.LocalDate;
3 import java.time.LocalTime;
4
5 12 usages
6 public class Restricted_Spots {
7     1 usage
8     static DateTimeFormatter date = DateTimeFormatter.ofPattern("dd/MM/yyyy"); // The date in the "dd/MM/yyyy" format
9     1 usage
10    static DateTimeFormatter time = DateTimeFormatter.ofPattern("HH:mm"); // The time in the "HH:mm" format
11    1 usage
12    static LocalDate localDate = LocalDate.now(); // current date
13    1 usage
14    static LocalTime localTime = LocalTime.now(); // current time
15    6 usages 6 inheritors
16    public static class Area { // public nested class inside the Restricted_Spots class
17        2 usages
18        int SpotID; //Instance variable for attribute SpotID
19        2 usages
20        String SpotName; //Instance variable for attribute SpotName
21        2 usages
22        int SpotArea; //Instance variable for attribute SpotArea
23        14 usages
24        int SpotPermittedAverageTime; //Instance variable for attributeSpotPermittedAverageTime
25        9 usages
26        int SpotMaximumCapacity; //Instance variable for attribute SpotMaximumCapacity
27        8 usages
28        int NumberOfPeople; //Instance variable for attribute NumberOfPeople
29
30        6 usages
31        public Area(int ID, String AreaName, int AreaSpace, int AvgTime, int Space) { //Constructor for the Area Class which takes in 5 arguments
32            SpotID = ID; //Initialize instance variables for the Area class
33            SpotName = AreaName;
34            SpotArea = AreaSpace;
35            SpotPermittedAverageTime = AvgTime;
36            SpotMaximumCapacity = Space/4; //We enter the same value as AreaSpace and then divide by 4, because of 4 directions assuming that each person has a 1-meter distance
37            NumberOfPeople = (int) (Math.random()*(SpotMaximumCapacity+1)+0); //Random number generator that runs from 0 to maximum capacity
38        }
39
40        6 usages
41        public int permission(int numberofpeople, int SpotMaximumCapacity) { //Method that takes 2 arguments, determines if the user is permitted entrance or not
42            if(numberofpeople < SpotMaximumCapacity){
43                return 1;
44            }
45        }
46    }
47 }
```



```
27 public int permission(int numberofpeople, int SpotMaximumCapacity) { //Method that takes 2 arguments, determines if the user is permitted entrance or not
28     if(numberofpeople < SpotMaximumCapacity){
29         return 1;
30     }
31     else{
32         return 0;
33     }
34 }
35
36 6 usages
37 public void Display() { //Method that prints out the information of the SpotArea
38     System.out.println("\nStudent ID: 28417309");
39     System.out.println("Name: Lee Chong En");
40     System.out.println("Spot ID: " + SpotID); //Calling the attribute from Area class
41     System.out.println("Spot Name: " + SpotName); //Calling the attribute from Area class
42     System.out.println("Spot Area: " + SpotArea); //Calling the attribute from Area class
43     System.out.println("Spot Permitted Average Time: " + SpotPermittedAverageTime + " minutes"); //Calling the attribute from Area class
44     System.out.println("Spot Maximum Capacity: " + SpotMaximumCapacity); //Calling the attribute from Area class
45     System.out.println("Current Capacity: " + NumberOfPeople); //Calling the attribute from Area class
46     System.out.println("Date: " + date.format(localDate)); //Using LocalDate to display the current date, uses the format
47     System.out.println("Time: " + time.format(localTime)); //Using LocalDate to display the current time, uses the format
48 }
49
50 2 usages
51 public static class Area1 extends Area { //Subclass Area1 inherits from the parent class Area and overrides the constructor to set their specified values (this is also a form of polymorphism)
52     1 usage
53     public Area1() {
54         super(101, "AreaName: "Out-Patient Visitors Main Waiting Area", AreaSpace: 300, AvgTime: 60, Space: 300); //Using the super keyword to inherit properties and methods from the parent class and also pass the
55     } //Setting the specified values
56 }
57
58 2 usages
59 public static class Area2 extends Area { //Subclass Area2 which inherits from the parent class Area and overrides the constructor to set their specified values (this is also a form of polymorphism)
60     1 usage
61     public Area2() {
62         super(102, "AreaName: "Out-Patient Visitors Sub-Waiting Area", AreaSpace: 200, AvgTime: 60, Space: 200); //Using the super keyword to inherit properties and methods from the parent class and also pass the
63     } //Setting the specified values
64 }
65
66 2 usages
67 public static class Area3 extends Area { //Subclass Area3 which inherits from the parent class Area and overrides the constructor to set their specified values (this is also a form of polymorphism)
68     1 usage
69     public Area3() {
70         super(103, "AreaName: "Out-Patient Visitors Sub-Waiting Area", AreaSpace: 200, AvgTime: 60, Space: 200); //Using the super keyword to inherit properties and methods from the parent class and also pass the
71     } //Setting the specified values
72 }
73 }
```


Class 3: Static Distancing

```
Project
<
1  Restricted_Spots.java
2  Static_Distancing.java
3  Dynamic_Distancing.java
4
5  import java.util.Objects; //Importing 2 packages
6  import java.util.Scanner;
7
8  public class Static_Distancing {
9      72 usages
10     public static class SD extends Dynamic_Distancing() //SD subclass inheriting Dynamic Distancing Class
11
12     public static void main(String[] args) {
13         String choice; //Choice variable is declared here, this is user input
14         do { //do while loop starts here
15             System.out.println("\n");
16             Scanner sc = new Scanner(System.in); //Creating a new instance of the Scanner class
17             System.out.println("\n");
18             Choose the area of the hospital you want to enter:
19             1. Out-Patient Visitors Main Waiting Area
20             2. Out-Patient Visitors Sub-Waiting Area
21             3. Intensive Care Unit Visiting Area
22             4. In-Patient Visitors Waiting Area
23             5. Medicine Dispensary Unit Waiting Area
24             6. In-Patient Visitors Sub-Waiting Area
25             7. Exit
26
27             Choice = "\n"; // *** syntax is used to create multi-line string for easier reading
28             int a = sc.nextInt(); // Input is taken in here and assigned to variable integer a
29             switch (a) { // start of the switch statement where it checks user input in variable a
30                 case 1 -> {
31                     Restricted_Spots.Area1 Choice1 = new Restricted_Spots.Area1(); //Object of class Area1 is created and assigned to Choice1
32                     Choice1.Display(); //Method display is called on Choice1 Object
33
34                     if ((Choice1.permission(Choice1.NumberOfPeople, Choice1.SpotMaximumCapacity)) == 1) { //Permission is called on Choice1 object to check if maximum capacity of area has been reached or not
35                         System.out.println("\n");
36
37                         You are allowed to enter the area.
38                         Please enter the distance you are keeping from people around you from all 4 directions.***; // *** syntax is used to create multi-line string for easier reading
39                         System.out.println("\nFront: ");
40                         float Front = sc.nextFloat(); // User input where distance is entered from Front
41                         System.out.println("\nBack: ");
42                         float Back = sc.nextFloat(); // User input where distance is entered from Back
43                         System.out.println("\nLeft: ");
44                         float Left = sc.nextFloat(); // User input where distance is entered from Left
45                         System.out.println("\nRight: ");
46                         float Right = sc.nextFloat(); // User input where distance is entered from Right
47                     }
48                 }
49             }
50         } while (true);
51     }
52 }
53
54 Version Control  TODO  Problems  Terminal  Services
55 Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built JDK shared indexes // Always download // Download once // Don't show again // Configure... (7 minutes ago) 54-135 LF UTF-8 4 spaces
```

```
Project
<
35 Restricted_Spots.java
36 Static_Distancing.java
37 Dynamic_Distancing.java
38
39 System.out.println("\nFront: ");
40 float Front = sc.nextFloat(); // User input where distance is entered from Front
41 System.out.println("\nBack: ");
42 float Back = sc.nextFloat(); // User input where distance is entered from Back
43 System.out.println("\nLeft: ");
44 float Left = sc.nextFloat(); // User input where distance is entered from Left
45 System.out.println("\nRight: ");
46 float Right = sc.nextFloat(); // User input where distance is entered from Right
47
48 SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
49 SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
50 SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
51 SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
52 } else { //If the area is full, it will fall into this else block
53     System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice1.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
54     String waitChoice = sc.next(); //User input taken here
55     if (waitChoice.equals("y") || waitChoice.equals("Y")) { //If the user input is equals to 'y'
56         System.out.println("\n" + Choice1.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
57         System.out.println("\nPlease enter the distance you are keeping from people around you from all 4 directions");
58
59         System.out.println("\nFront: ");
60         float Front = sc.nextFloat(); // User input where distance is entered from Front
61         System.out.println("\nBack: ");
62         float Back = sc.nextFloat(); // User input where distance is entered from Back
63         System.out.println("\nLeft: ");
64         float Left = sc.nextFloat(); // User input where distance is entered from Left
65         System.out.println("\nRight: ");
66         float Right = sc.nextFloat(); // User input where distance is entered from Right
67
68         SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
69         SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
70         SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
71         SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
72     }
73 }
74 case 2 -> {
75     Restricted_Spots.Area2 Choice2 = new Restricted_Spots.Area2(); //Object of class Area2 is created and assigned to Choice2
76     Choice2.Display(); //Method display is called on Choice1 Object
77
78     if ((Choice2.permission(Choice2.NumberOfPeople, Choice2.SpotMaximumCapacity)) == 1) { //Permission is called on Choice1 object to check if maximum capacity of area has been reached or not
79         System.out.println("\n");
80     }
81 }
82
83 Version Control  TODO  Problems  Terminal  Services
84 Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built JDK shared indexes // Always download // Download once // Don't show again // Configure... (7 minutes ago) 54-135 LF UTF-8 4 spaces
```

```
Project
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Restricted_Spots.java
Static_Distancing.java
Dynamic_Distancing.java
71
72 Restricted_Spots.Area2 Choice2 = new Restricted_Spots.Area2(); //Object of class Area2 is created and assigned to Choice2
73 Choice2.Display(); //Method display is called on Choice2 Object
74
75
76 if ((Choice2.permission(Choice2.NumberOfPeople, Choice2.SpotMaximumCapacity)) == 1) { //Permission is called on Choice2 object to check if maximum capacity of area has been reached or not
77     System.out.println("");
78
79     You are allowed to enter the area.
80     Please enter the distance you are keeping from people around you from all 4 directions."");
81     System.out.println("\nFront: ");
82     float Front = sc.nextFloat(); // User input where distance is entered from Front
83     System.out.println("\nBack: ");
84     float Back = sc.nextFloat(); // User input where distance is entered from Back
85     System.out.println("\nLeft: ");
86     float Left = sc.nextFloat(); // User input where distance is entered from Left
87     System.out.println("\nRight: ");
88     float Right = sc.nextFloat(); // User input where distance is entered from Right
89
90     SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
91     SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
92     SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
93     SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
94 } else {
95     System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice2.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
96     System.out.println("\ndo you want to wait? (y/n): ");
97     String waitchoice = sc.next();
98     if (waitchoice.equals("y") || waitchoice.equals("Y")) { //Check user input if it is equal to 'y' or 'yes'
99         System.out.println("\n + Choice2.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
100         System.out.println("Please enter the distance you are keeping from people around you from all 4 directions.");
101
102         System.out.println("\nFront: ");
103         float Front = sc.nextFloat(); // User input where distance is entered from Front
104         System.out.println("\nBack: ");
105         float Back = sc.nextFloat(); // User input where distance is entered from Back
106         System.out.println("\nLeft: ");
107         float Left = sc.nextFloat(); // User input where distance is entered from Left
108         System.out.println("\nRight: ");
109         float Right = sc.nextFloat(); // User input where distance is entered from Right
110
111         SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
112         SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
113         SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
114         SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
115     }
116 }
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119 Version Control
120
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Project
<
Restricted_Spots.java
Static_Distancing.java
Dynamic_Distancing.java
Notifications
161:26 LF UTF-8 4 spaces

case 4 -> {
    Restricted_Spots.Area4 Choice4 = new Restricted_Spots.Area4();
    Choice4.Display();

    if ((Choice4.permission(Choice4.NumberOfPeople, Choice4.SpotMaximumCapacity)) == 1) { //Permission is called on Choice4 object to check if maximum capacity of area has been reached or not
        System.out.println("");

        You are allowed to enter the area.
        Please enter the distance you are keeping from people around you from all 4 directions."");
        System.out.print("\nFront: ");
        float Front = sc.nextFloat(); // User input where distance is entered from Front
        System.out.print("\nBack: ");
        float Back = sc.nextFloat(); // User input where distance is entered from Back
        System.out.print("\nLeft: ");
        float Left = sc.nextFloat(); // User input where distance is entered from Left
        System.out.print("\nRight: ");
        float Right = sc.nextFloat(); // User input where distance is entered from Right

        SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
        SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
        SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
        SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
    } else {
        System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice4.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
        System.out.print("\ndo you want to wait? (y/n): ");
        String waitchoice = sc.next();
        if (waitchoice.equals("y") || waitchoice.equals("Y")) { //Check user input if it is equal to 'y' or 'yes'
            System.out.println("\n " + Choice4.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
            System.out.println("Please enter the distance you are keeping from people around you from all 4 directions.");

            System.out.print("\nFront: ");
            float Front = sc.nextFloat(); // User input where distance is entered from Front
            System.out.print("\nBack: ");
            float Back = sc.nextFloat(); // User input where distance is entered from Back
            System.out.print("\nLeft: ");
            float Left = sc.nextFloat(); // User input where distance is entered from Left
            System.out.print("\nRight: ");
            float Right = sc.nextFloat(); // User input where distance is entered from Right

            SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
            SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
            SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
            SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
        }
    }
}

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Project
<
Restricted_Spots.java
Static_Distancing.java
Dynamic_Distancing.java
Notifications
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case 5 -> {
    Restricted_Spots.Area5 Choice5 = new Restricted_Spots.Area5();
    Choice5.Display();

    if ((Choice5.permission(Choice5.NumberOfPeople, Choice5.SpotMaximumCapacity)) == 1) { //Permission is called on Choice1 object to check if maximum capacity of area has been reached or not
        System.out.println("");

        You are allowed to enter the area.
        Please enter the distance you are keeping from people around you from all 4 directions."");
        System.out.print("\nFront: ");
        float Front = sc.nextFloat(); // User input where distance is entered from Front
        System.out.print("\nBack: ");
        float Back = sc.nextFloat(); // User input where distance is entered from Back
        System.out.print("\nLeft: ");
        float Left = sc.nextFloat(); // User input where distance is entered from Left
        System.out.print("\nRight: ");
        float Right = sc.nextFloat(); // User input where distance is entered from Right

        SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
        SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
        SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding
        SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
    } else {
        System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice5.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
        System.out.print("\ndo you want to wait? (y/n): ");
        String waitchoice = sc.next();
        if (waitchoice.equals("y") || waitchoice.equals("Y")) { //Check user input if it is equal to 'y' or 'yes'
            System.out.println("\n " + Choice5.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
            System.out.println("Please enter the distance you are keeping from people around you from all 4 directions.");

            System.out.print("\nFront: ");
            float Front = sc.nextFloat(); // User input where distance is entered from Front
            System.out.print("\nBack: ");
            float Back = sc.nextFloat(); // User input where distance is entered from Back
            System.out.print("\nLeft: ");
            float Left = sc.nextFloat(); // User input where distance is entered from Left
            System.out.print("\nRight: ");
            float Right = sc.nextFloat(); // User input where distance is entered from Right

            SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
            SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
            SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding, this is the Mask Rules
            SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
        }
    }
}

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```

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Project
└─ Restricted_Spots.java
└─ Static_Distancing.java
└─ Dynamic_Distancing.java

254 case 6 -> {
255     Restricted_Spots.Area6 Choice6 = new Restricted_Spots.Area6();
256     Choice6.Display();
257
258     if ((Choice6.permission(Choice6.NumberOfPeople, Choice6.SpotMaximumCapacity)) == 1) { //Permission is called on Choice1 object to check if maximum capacity of area has been reached or not
259         System.out.println("");
260
261         You are allowed to enter the area.
262         Please enter the distance you are keeping from people around you from all 4 directions."");
263         System.out.println("\nEnter: ");
264         float Front = sc.nextFloat(); // User input where distance is entered from Front
265         System.out.println("\nEnter: ");
266         float Back = sc.nextFloat(); // User input where distance is entered from Back
267         System.out.println("\nEnter: ");
268         float Left = sc.nextFloat(); // User input where distance is entered from Left
269         System.out.println("\nEnter: ");
270         float Right = sc.nextFloat(); // User input where distance is entered from Right
271
272         SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
273         SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
274         SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding, this is the Mask Rules
275         SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
276     } else {
277         System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice6.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
278         System.out.println("\ndo you want to wait? (y/n): ");
279         String waitchoice = sc.next();
280         if (waitchoice.equals("y")) || waitchoice.equals("Y") { //Check user input if it is equal to 'y' or 'yes'
281             System.out.println("\n + Choice6.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
282             System.out.println("Please enter the distance you are keeping from people around you from all 4 directions.");
283
284             System.out.println("\nEnter: ");
285             float Front = sc.nextFloat(); // User input where distance is entered from Front
286             System.out.println("\nEnter: ");
287             float Back = sc.nextFloat(); // User input where distance is entered from Back
288             System.out.println("\nEnter: ");
289             float Left = sc.nextFloat(); // User input where distance is entered from Left
290             System.out.println("\nEnter: ");
291             float Right = sc.nextFloat(); // User input where distance is entered from Right
292
293             SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
294             SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
295             SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding, this is the Mask Rules
296             SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
297         }
298     }
299 }
300
301 Version Control Find TODO Problems Terminal Services
302 Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built JDK shared indexes // Always download // Download once // Don't show again // Configure... (9 minutes ago) 161:26 LF UTF-8 4 spaces
```

```
Project
└─ Restricted_Spots.java
└─ Static_Distancing.java
└─ Dynamic_Distancing.java

272 float Right = sc.nextFloat(); // User input where distance is entered from Right
273
274 SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
275 SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
276 SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding, this is the Mask Rules
277 SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
278 } else {
279     System.out.println("\nThe capacity of the area is full. You are not allowed to enter the area. You need to wait " + Choice6.SpotPermittedAverageTime + " minutes."); //User is asked to wait SpotP
280     System.out.println("\ndo you want to wait? (y/n): ");
281     String waitchoice = sc.next();
282     if (waitchoice.equals("y")) || waitchoice.equals("Y") { //Check user input if it is equal to 'y' or 'yes'
283         System.out.println("\n + Choice6.SpotPermittedAverageTime + " minutes has passed, you are now permitted to enter."); //Assume that the SpotPermittedAverageTime has passed
284         System.out.println("Please enter the distance you are keeping from people around you from all 4 directions.");
285
286         System.out.println("\nEnter: ");
287         float Front = sc.nextFloat(); // User input where distance is entered from Front
288         System.out.println("\nEnter: ");
289         float Back = sc.nextFloat(); // User input where distance is entered from Back
290         System.out.println("\nEnter: ");
291         float Left = sc.nextFloat(); // User input where distance is entered from Left
292         System.out.println("\nEnter: ");
293         float Right = sc.nextFloat(); // User input where distance is entered from Right
294
295         SD.Direction(Front, Back, Left, Right); //Direction method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
296         SD.Contact_Status(Front, Back, Left, Right); //Contact_Status method called on the SD subclass, SD subclass inheriting the method from Dynamic Distancing class
297         SD.Contact_Status(SD.FindShortestDistance(Front, Back, Left, Right)); //Contact Status method called on the SD subclass, this is method overriding, this is the Mask Rules
298         SD.ClinicAppointment(SD.FindShortestDistance(Front, Back, Left, Right)); //Clinic Appointment method called on SD subclass
299     }
300 }
301
302 case 7 -> System.exit(0); //Case 7, exits the program
303 default -> System.out.println("\nPlease enter a valid number."); //Default switch case given that the user enters a number outside 1-7
304 }
305
306 System.out.println("\ndo you want to visit another area? (y/n): ");
307 choice = sc.next(); //User input to take in the users choice
308 while (Objects.equals(choice, "n") || Objects.equals(choice, "N")) { //While statement that checks if the user wants to visit another area of the hospital or not
309     System.out.println("\nThank you. Good Bye.");
310 }
311 }
312
313 Version Control Find TODO Problems Terminal Services
314 Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built JDK shared indexes // Always download // Download once // Don't show again // Configure... (9 minutes ago) 161:26 LF UTF-8 4 spaces
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