

Question - 1

Paying Guest Java Problem 1 Sagar

SCORE: 40 points

CORE JAVA

Create a class PG with the below attributes:

PGRegistrationNumber-int

PGName-String

PGLocation-String

PGRent-int

PGRooms-int

The above attributes should be private. Write getters, setters and parameterized constructor as required.

Create class MyClass with main method.

Implement two static methods - getPGswithRentHigherThan and getPGswithTotalRentLocationAscendingRent in MyClass class.

getPGswithRentHigherThan method:

This method will take an array of PG objects and an int value as input parameters.

The method will find the number of PG which are having rent higher than the passed int parameter. This method will return the count if any PG found with the above mentioned condition. If there is no PG that matches then the method should return 0.

getPGswithTotalRentLocationAscendingRent method:

This method will take an array of PG objects, a String value, and an int value as input parameters.

This method should return an array of PG objects in an ascending order of their rent which have the **Total Rent(Formula is given below)** less than the given integer input(int parameter passed) and in the location same as the string parameter passed.

If there is no such object found, then the method should return null.

Note :

Total Rent Formula=Rent*Rooms

where Rent is the PGRent value of a PG object and Rooms is the PGRooms value of a PG Object

No two PG objects would have same PGRent and PGRooms.

Search should be case sensitive.

The above mentioned static methods should be called from the main method.

For getPGswithRentHigherThan method - The main method should print number of PGs which fulfills the condition, if the returned value is not 0. If the returned value is 0, then it should print "No PGs found"

For getPGswithTotalRentLocationAscendingRent method - The main method should print the PGNames of the PGs in the returned PG object array if the returned value is not null. If the returned value is null then it should print "No PGs found."

Before calling these static methods in main, use Scanner object to read the values of four PG objects referring attributes in the above mentioned attribute sequence.

Next, read the value for int parameter,String parameter and int parameter for capturing PGRent,PGLocation and totalrent respectively needed for the functions.

Consider below sample input and output:

Input1:

145

AkhilPG

HinjewadiPhase3

8000

50
243
BittuPG
HinjewadiPhase1
7500
40
764
StanzaLiving
HinjewadiPhase2
11000
100
677
ZoloFlamingo
HinjewadiPhase3
9500
30
8500
HinjewadiPhase3
500000

Output1:

2
AkhilPG
ZoloFlamingo

Input2:

145
AkhilPG
HinjewadiPhase3
8000
50
243
BittuPG
HinjewadiPhase1
7500
40
764
StanzaLiving
HinjewadiPhase2
11000
100
677
ZoloFlamingo
HinjewadiPhase3
9500
30
15000
Wakad
100000
Output2:
No PGs found
No PGs found.

Sample code snippet for reference:
Please use below code to build your solution.

```
import java.util.Scanner;
public class Solution
{
    public static void main(String[] args)
    {
        //code to read values
        //code to call required method
        //code to display the result
    }
    //code functions
}
class PG
{
    //code to build the class
}
```

Note on using Scanner object:

Sometimes scanner does not read the new line character while invoking methods like nextInt(), nextDouble() etc.

Usually, this is not an issue, but this may be visible while calling nextLine() immediately after those methods.

Consider below input values:

```
100
green Spud
```

Referring below code:

```
Scanner sc = new Scanner(System.in);
```

```
int x = sc.nextInt();
```

```
String str = sc.nextLine(); -> here we expect str to have value SpudType.Instead it may be "".
```

If above issue is observed, then it is suggested to add one more explicit call to nextLine() after reading numeric value.

Question - 2

SCORE: 40 points

Paying Guest Java Problem 2 Sagar

CORE JAVA

Create a class PG with the below attributes:

PGRegistrationNumber-int

PGName-String

PGLocation-String

PGRent-int

PGRooms-int

The above attributes should be private. Write getters, setters and parameterized constructor as required.

Create class MyClass with main method.

Implement two static methods - getPGswithRentLowerThan and getPGswithTotalRentNameAscendingRent in MyClass class.

getPGswithRentLowerThan method:

This method will take an array of PG objects and an int value as input parameters.

The method will find the number of PGs which are having rent lower than the passed int parameter. This method will return the count if any PG is found with the above-mentioned condition. If there is no PG that matches then the method should return 0.

getPGswithTotalRentNameAscendingRent method:

This method will take an array of PG objects, a String value, and an int value as input parameters.

This method should return an array of PG objects in an ascending order of their rent which have the **Total Rent(Formula is given below)** more than the given integer input(int parameter passed) and having the PGName same as the string parameter passed.

If there is no such object found, then the method should return null.

Note :

Total Rent Formula=Rent*Rooms

where Rent is the PGRent value of a PG object and Rooms is the PGRooms value of a PG Object

No two PG objects would have same PGRent and PGRooms.

Search should be case sensitive.

The above mentioned static methods should be called from the main method.

For getPGswithRentLowerThan method - The main method should print number of PGs which fulfills the condition, if the returned value is not 0. If the returned value is 0, then it should print "No PGs found"

For getPGswithTotalRentNameAscendingRent method - The main method should print the PGNames of the PGs in the returned PG object array if the returned value is not null. If the returned value is null then it should print "No PGs found."

Before calling these static methods in main, use Scanner object to read the values of four PG objects referring attributes in the above mentioned attribute sequence.

Next, read the value for int parameter,String parameter and int parameter for capturing PGRent,PGLocation and totalrent respectively needed for the functions.

Consider below sample input and output:

Input1:

145
AkhilPG
HinjewadiPhase3
8000
50
243
BittuPG
HinjewadiPhase3
7500
40
764
StanzaLiving
HinjewadiPhase3
11000
100
677
ZoloFlamingo
HinjewadiPhase3
9500
15
15000
BittuPG
100000

Output1:

4
BittuPG

Input2:

145
AkhilPG
HinjewadiPhase3
8000
50
243
BittuPG
HinjewadiPhase1
7500
40
764

StanzaLiving
HinjewadiPhase2
11000
100
677
ZoloFlamingo
HinjewadiPhase3
9500
30
5000
Venky
100000
Output2:
No PGs found
No PGs found.

Sample code snippet for reference:
Please use below code to build your solution.

```
import java.util.Scanner;
public class Solution
{
    public static void main(String[] args)
    {
        //code to read values
        //code to call required method
        //code to display the result
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    //code functions
}
class PG
{
    //code to build the class
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```

Note on using Scanner object:
Sometimes scanner does not read the new line character while invoking methods like nextInt(), nextDouble() etc.
Usually, this is not an issue, but this may be visible while calling nextLine() immediately after those methods.
Consider below input values:
100
green Spud
Referring below code:
Scanner sc = new Scanner(System.in);
int x = sc.nextInt();
String str = sc.nextLine(); -> here we expect str to have value SpudType. Instead it may be "".
If above issue is observed, then it is suggested to add one more explicit call to nextLine() after reading numeric value.

Question - 3

Java_Web

SCORE: 1 points

How to create a cookie in servlet?

- ☒ Use new operator
- ☐ Use request.getCookie() method

- ☐ Use response.getCookie() method
- ☐ None of the above

Question - 4

Java_Web

SCORE: 1 points

How can you retrieve a parameter passed in the URL in a JSP Page?

- ☐ request.getAttribute()
- ☒ request.getParameter()
- ☐ session.getAttribute()
- ☐ request.response.form()

Question - 5

Java_Web

SCORE: 1 points

Which method is called only once during the lifecycle of a servlet?

- ☒ init()
- ☐ start()
- ☐ doGet()
- ☐ doPost()

Question - 6

Java_Web

SCORE: 1 points

Which HTTP method is frequently utilized when submitting a form?

- ☐ PUT
- ☐ GET
- ☒ POST
- ☐ Delete

Question - 7

Java_Web

SCORE: 1 points

Which of the following code is used to get an attribute in a HTTP Session object in servlets?

- ☒ session.getAttribute(String name)
- ☐ session.alterAttribute(String name)
- ☐ session.updateAttribute(String name)
- ☐ session.setAttribute(String name)

Question - 8

Java_Web

SCORE: 1 points

In the context of Servlets, what is the purpose of the 'web.xml' deployment descriptor?

- ☐ To configure the database connection
- ☐ To manage cookies
- ☒ To specify the URL patterns that map to servlets
- ☐ To manage user sessions

Question - 9

Java_Web

SCORE: 1 points

Which of the following is stored in the client side?

- ☐ SSL sessions
- ☐ Hidden form fields
- ☒ Cookies
- ☐ Url rewriting

Question - 10

Java_Web

SCORE: 1 points

What will be the output for the following code?

```
<html><body>
<% int i = 20 ;%>
<% while(i>=15) { %>
out.print(i);
<% } %>
</body></html>
```

- ☐ 20
- ☐ 15
- ☐ 2.02E+011
- ☒ None of the above

Question - 11

Java_Web

SCORE: 1 points

What is the default scope of JSP variable?

- ☒ Page
- ☐ Request
- ☐ Session
- ☐ Application

Question - 12

Java_Web

SCORE: 1 points

Which of the following is a JSP declaration?

- ☐ <%-- code --%>
- ☐ <% code %>
- ☐ <%= code %>`
- ☒ <%! code %>

Question - 13

SQL

SCORE: 1 points

Which SQL statement is used to delete data from a database

- ☐ REMOVE
- ☒ DELETE
- ☐ DROP
- ☐ CLEAR

Question - 14

SQL

SCORE: 1 points

Which of the following best describes a subquery?

- ☒ A query inside a query.
- ☐ A query that combines the results of multiple queries.
- ☐ A query that updates multiple rows.

☐ A query that deletes records from a table.

Question - 15

SQL

SCORE: 1 points

What will be the result of the following SQL query given the tables Employees and Departments?

Employees

EmployeeID	Name
1	John
2	Jane
3	Alice

Departments

DepartmentID	EmployeeID	DepartmentName
1	1	HR
2	2	IT

```
SELECT Name
FROM Employees
WHERE EmployeeID IN (SELECT EmployeeID FROM Departments WHERE DepartmentName = 'IT');
```

- ☐ John
- ☒ Jane
- ☐ John & Jane
- ☐ Alice

Question - 16

SQL

SCORE: 1 points

Which SQL function is used to count the number of rows in a result set?

- ☐ SUM()
- ☐ TOTAL()
- ☒ COUNT()
- ☐ NUMBER()

Question - 17

SQL

SCORE: 1 points

What will be the output of the following query given the table Orders**?

OrderID	CustomerID	Amount
1	1	100
2	2	200
3	1	150

```
SELECT CustomerID, SUM(Amount) AS TotalAmount
FROM Orders
GROUP BY CustomerID;
```

- ☐ 1 | 100
2 | 200
- ☒ 1 | 250
2 | 200
- ☐ 1 | 100
2 | 200
1 | 150
- ☐ 1 | 450
2 | 200

Question - 18

JDBC

SCORE: 1 points

From which interface is the JDBC rows objects are called from

- ☐ PreparedStatement
- ☐ Callable Statement
- ☒ ResultSet
- ☐ None of the above

Question - 19

JDBC

SCORE: 1 points

Which of the following is a core component of JDBC?

- ☒ JDBC Driver
- ☐ JDBC Engine
- ☐ JDBC Compiler
- ☐ JDBC Interpreter

Question - 20

JDBC

SCORE: 1 points

What should be present in blank for the below SQL statement ?
PreparedStatement ps = con.prepareStatement("select * from student");
ResultSet rs = ps.execute____();

- ☐ Update
- ☐ Select
- ☒ Query
- ☐ None of the above

Question - 21
JDBC

SCORE: 1 points

Given the following code snippet, what will be the output?

```
String query = "SELECT name, age FROM Employees";  
Statement stmt = con.createStatement();  
ResultSet rs = stmt.executeQuery(query);  
while (rs.next()) {  
    System.out.println(rs.getString("name") + " " + rs.getInt("age"));  
}
```

Assume the Employees table has the following data:

name	age
John	30
Jane	25

- ☒ John 30
Jane 25
- ☐ name age
John 30
Jane 25
- ☐ Jane 25
- ☐ John 30

Question - 22
JDBC

SCORE: 1 points

Which method is used to establish a connection to a database in JDBC?

- ☐ DriverManager.connect()
- ☒ DriverManager.getConnection()
- ☐ Connection.open()
- ☐ Connection.connect()

Question - 23

Adv_Java

SCORE: 1 points

Which method is used to retrieve a value associated with a key in a `Map`?

- ☐ getValue()
- ☐ geKey()
- ☒ get()
- ☐ retrieve()

Question - 24

Adv_Java

SCORE: 1 points

Which of the following is the correct order of blocks when using exception Handling in java ?

- ☐ catch -> try -> finally
- ☐ finally -> catch -> try
- ☐ finally -> try -> catch
- ☒ try -> catch -> finally

Question - 25

Adv_Java

SCORE: 1 points

```
class Vehicle {
    void start() {
        System.out.println("Vehicle started");
    }
}

class Car extends Vehicle {
    void start() {
        System.out.println("Car started");
    }
}

class Bike extends Vehicle {
    void start() {
        System.out.println("Bike started");
    }
}

public class Test {
    public static void main(String[] args) {
        Vehicle v;
        v = new Car();
        v.start();
        v = new Bike();
        v.start();
    }
}
```

```
}  
} Predict the output
```

- ☐ Vehicle started
Vehicle started
- ☒ Car started
Bike started
- ☐

Bike started
Car started
- ☐ Compilation error

Question - 26

Adv_Java

SCORE: 1 points

Which method is used to check if a file or directory exists in Java?

- ☒ exist()
- ☐ createNewFile()
- ☐ makeDirectory()
- ☐ isFileOrDirectory()

Question - 27

Adv_Java

SCORE: 1 points

```
Set<String> set = new TreeSet<>();  
set.add("banana");  
set.add("apple");  
set.add("mango");  
System.out.println(set);
```

Predict the Output

- ☐ [banana, apple, mango]
- ☒ [apple, banana, mango]
- ☐ [mango, banana, apple]
- ☐ [apple, mango, banana]

Question - 28

Adv_Java

SCORE: 1 points

Which keyword is used to implement inheritance in Java?

- ☒ extends
- ☐ inherits
- ☐ implements
- ☐ super

Question - 29

SCORE: 1 points

Adv_Java

Which of the following is a superclass of all exception classes ?

- ☐ RuntimeException
- ☐ Exception
- ☐ Error
- ☒ Throwable

Question - 30

SCORE: 1 points

Adv_Java

```
public class Test {  
    public static void main(String[] args) {  
        try {  
            int a = 10 / 0;  
        } catch (ArithmeticException e) {  
            System.out.println("Arithmetic Exception caught");  
        } finally {  
            System.out.println("Finally block executed");  
        }  
    }  
}
```

Predict the output.

- ☐ Arithmetic Exception caught
- ☐ Finally block executed
- ☒

Arithmetic Exception caught
Finally block executed
- ☐ Compilation error

Question - 31

SCORE: 1 points

Adv_Java

What can you do with an ArrayList in Java?

- ☐ You can store elements with duplicate keys.
- ☐ You can only store integer values.
- ☒ You can store elements dynamically without defining the size beforehand.
- ☐ You can store key-value pairs.

Question - 32
Adv_Java

SCORE: 1 points

Which type of polymorphism is achieved through method overriding?

- ☐ Compile time Polymorphism
- ☒ Dynamic method disptach
- ☐ Static polymorphism
- ☐ None of the above

Question - 33
Exception Handling Sagar Set 1

SCORE: 10 points

Java Problem :

Write a Java Program to Calculate the answer for the following Mathematical Expression:

Formula

$$v_e = \sqrt{\frac{2GM}{r}}$$

v_e = escape velocity
 G = universal gravitational constant
 M = mass of the body to be escaped from
 r = distance from the center of the mass

where G, M and r will be taken as an input sequence as mentioned in the sample Test Cases.

G,M,r are integer values and ve is double value.

You also need to take care of exceptions that can occur on the way to calculate the same.In case you find any, you have to print "Arithmetic Exception" (without double quotes) .

Kindly check the following sample test case:

Input

23
34
22

Output

