**Topic 1**

**Java Programming Preliminaries**

**Exercises**

**Questions: 9**

**Problem 1:**

The speed of a world's fastest Jet Plane is 689232 miles per hour. Write a Java program to find out how many miles it will travel in 5 hours?

**Problem 2:**

The salary of Justin is USD 55555.55. He pays 20% of his salary towards tax. He gets a bonus of 15% of his salary. He spends 15% of his salary towards home utility and phone bills. He spends around 50% of his salary towards his lunch and dinner. How much he saves after all his expenses?

**Problem 3:**

Adele, the 8th grade school student got the points in each subject as below:

English - 95 (out of 100)

Math - 45 (out of 50)

Science - 88 (out of 100)

Find out the percentage (for 100) she scored in all three subjects.

**Problem 4:**

Drake has USD 5000. He buys 5 mobile phones which costs 650 each. Find out how much amount will be left with him after the purchase?

Hint: Use the modulus operator (%)

**Problem 5:**

Selena has USD 1000. One tie costs USD 75. How many ties she can buy and how much amount will be left with her? Write a Java program to achieve this.

**Problem 6:**

Shawn has USD 1000. One tie costs USD 75. To buy 14 ties, how much more money he would need?

Hint: Use the modulus operator (%)

**Problem 7:**

The ASCII number for a particular fruit is given below:

77 65 78 71 79

Find out the name of the fruit.

Tip: The name of the fruit is 5 characters long.

**Problem 8:**

Write the Java program to print the ASCII numbers for the animal LION.

**Problem 9:**

**Statement:**

Certain job would take 10 hours to complete. If one person works, this job will be completed in 10 hours.

**Question 1:** If two persons are employed, then in how many hours they together will complete the job?

**Question 2:** If three persons are employed, then how many hours they together will take to complete three such jobs?

Write Java programs to achieve this.

**Java Programs using if...else and logical/relational operators**

**Questions: 10**

**Time: 3.15 hours (195 minutes)**

**Problem 1:**

**Finding the costlier product.**

Hard code the prices of two products into two variables in the Java program. Name the variables product1 and product2. Write a Java program to find and print whether product1 is costlier or product2.

**Problem 2:**

**Calculating the net salary of an employee.**

Hard code the salary of an employee in the Java program itself and based on the formula below, calculate the tax, find out the net salary and display them both.

**Formula:**

If the salary is less than 2000, tax is 20% of the salary

If the salary is greater than 2000, tax is 30% of the salary

Net Salary = Salary - Tax

**Problem 3:**

**Product Price Calculator**

Hard code the product price & quantity and find out the amount to be paid.

Calculate the amount to be paid by multiplying the price and quantity.

**Problem 4:**

Do the above program using java.util.Scanner class (instructor will teach you how)

**Problem 5:**

**Product Price calculator with discount feature**

Accept the product price, quantity& discount rate. Find out the amount to be paid. Calculate the amount to be paid by multiplying the price and quantity and subtract the discount value.

**Hint:**

Discount rate should be entered as 0.1 for 10%, 0.2 for 20%, 0.3 for 30%

**Problem 6:**

**Student Grade Report Generator**

Accept the student name, grade in subject1, subject2 and subject3. Find out whether it is a pass or fail based on some criteria. Also, print the total grade and average grade.

**Problem 7:**

**Performance Finder**

On a particular day,

Super market1 made a sale for USD 15K for selling 100 items.

Super market2 sold 115 items each costs USD 75.

**Question 1:** Which one made the higher sale?

**Question 2:** If Super market2 wants to match the sale made by Super market 1, how many more product that it has to sell?

Write Java program to achieve this.

**Problem 8:**

**Salary Finder**

Alessia's salary is USD 3000. She gets 20% hike on her salary.

Meghan's salary is USD 2500. She gets 35% hike on her salary.

Write a Java program to find out who gets the higher salary between them.

**Problem 9:**

**Salary Hike Finder**

After certain hike, Taylor's net salary is USD 3500. Her basic salary is USD 3000.

After certain hike, Ellie's net salary is USD 3750. Her basic salary is USD 3100.

Then, who gets more hike?

Write a Java program to find out.

**Problem 10:**

**Product Picker**

Accept the product name, price and its quality (A or B or C) for three products.

**Question 1:**

If the quality is 'A' and the price is greater than USD 300, buy three numbers of this product.

If the quality is 'B' and the price is equal to USD 500, buy four numbers of this product.

If the quality is 'C' and the price is less than USD 200, buy five numbers of this product.

Print the total amount to be paid.

Write a Java program to achieve this.

**Java Programs Looping concept**

**Questions: 10**

**Time: 3.15 hours (195 minutes)**

**Problem 1:**

Print all the numbers from 1 to 20.

**Problem 2:**

Print all the numbers from 20 to 1.

**Problem 3:**

Print all even numbers from 1 to 20.

**Problem 4:**

Print all odd numbers from 20 to 100.

**Problem 5:**

**Finding the costlier product for a set of 5 products.**

Accept the prices of two products into two variables in the Java program. Name the variables product1 and product2. Write a Java program to find and print whether product1 is costlier or product2.

Repeat the above 5 times.

Hint: Use Scanner class

**Problem 6:**

**Calculating the net salary of an employee for 5 employees**

Accept the salary of an employee and based on the formula below, calculate the tax, find out the net salary and display them both.

**Formula:**

If the salary is less than 2000, tax is 20% of the salary

If the salary is greater than 2000, tax is 30% of the salary

Net Salary = Salary - Tax

Repeat the above for 5 employees.

**Problem 7:**

**Product Price Calculator for 10 products**

Accept the product price & quantity and find out the amount to be paid.

Calculate the amount to be paid by multiplying the price and quantity.

Repeat the above for 10 products.

**Problem 8:**

**Highest product price calculator**

Accept the product price & quantity and find out the amount to be paid.

Calculate the amount to be paid by multiplying the price and quantity.

Repeat the above for 10 products. Find and print the highest product price.

**Problem 9:**

**Top Grade Finder in Specific subject.**

Accept the student name, grade in subject1, subject2 and subject3 for 5 students. Find and print the name of the student who got highest grade in subject 2 alone.

**Problem 10:**

**Top Grade Finder in all subjects**

Accept the student name, grade in subject1, subject2 and subject3 for 5 students. Find and print the name of the student who got highest grade in all subjects.

**Hint:** The total of subject1, subject2 and subject3

**Java Programs using Arrays and command line arguments**

**Questions: 10**

**Time: 3. 5 hours (210 minutes)**

**Problem 1:**

Accept the product prices of 10 products into an integer array. Find and print the **costliest** product price among the 10 products. Write Java program using Scanner class and the concept of Array.

**Problem 2:**

Accept the product prices of 10 products into an integer array. Find and print the **cheapest** product price among the 10 products. Write Java program using Scanner class and the concept of Array.

**Problem 3:**

Accept the user's First Name, Last Name and gender from the command line arguments and display the greeting message as follows:

Welcome Ms. Katie Parry (if the user is female)

Welcome Pharrel Williams (if the user is male)

**Problem 4:**

Assuming there are multiple fields which constitutes a person's details. Example: FirstName, LastName, Title, Middlename etc.

FirstName is the mandatory field and other fields are optional

In case the user enters the optional fields then the program has to concatenate each of these fields and form the full name and display in the console.

Hint: Use command line arguments.

**Problem 5:**

Accept the salary of 10 employees into an array of data type double. Find and print the top 2 salary holders.

**Hint:** Use Scanner class

**Problem 6:**

Accept the salary of 10 employees into an array of data type double. Find and print the bottom 2 salary holders.

**Hint:** Use Scanner class

**Problem 7:**

Accept the product name and how many times it got sold, for ten products.

Find and print which product got sold most number of times.

**Hint:** Use Scanner class.

Use two arrays. One String array for storing the product name and one double array for storing the number of times the product got sold.

**Problem 8:**

**Multiplication Table Generator**

For any given number (Accept the number from the keyboard using Scanner class), the multiplication table should be generated as follows . For instance, if the number is 5, then it should output as:

5x1=5

5x2=10

5x3=15

5x4=20

5x5=25

5x6=30

5x7=35

5x8=40

5x9=45

5x10=50

**Problem 9:**

**Product Price Calculator till user enters the character "Y".**

Accept the product price & quantity and find out the amount to be paid.

Calculate the amount to be paid by multiplying the price and quantity.

Continue accepting this till the user enters "no".

**Hints:**

import java.util.\*;

Use Scanner class.

Use next() method to get “Y”or “N”from the user (choice)

Use nextInt() method to get integer value from the user (input)

Use nextDouble() method to get double value (decimal values) from the user.

**Problem 10:**

**Simple Fun Game Generator**

Accept 10 numbers from the keyboard. You could repeat the same numbers multiple times. Find out which number was typed more times by the user .