**DEPARTMENT OF COMPUTER TECHNOLOGY, MIT CAMPUS, ANNA UNIVERSITY**

**JAVA PROGRAMMING**

**19.08.2024**

**JAVA Laboratory Exercises**

Write a Java program to perform the following:

**Basic Constructs, Operators and Expressions**

1. To determine the sum of the following harmonic series for a given value of n:

1+1/2+1/3+…+ 1/n

1. To read the price of an item in decimal form like 75.95 and print the output in paise (like 7595 paise)
2. To convert the given temperature in Fahrenheit to Celsius using the conversion formula: C=F-32/1.8 and display the values in tabular form.
3. To find a) area=pi\*r\*r+2\*pi\*r\*h b) energy = mas(acceleration \*height +velocity2 / 2)
4. In inventory management, the economic order quantity for a single item is given by

EOQ= sqrt(2\*demand rate\*setup costs/holding cost per unit time) and the optimal time between orders is TBO = sqrt(2\*setup costs/demand rate \* holding cost per item per unit time), Write a Java program to compute EOQ and TBO, given demand rate (items per unit time), setup costs (per order) and the holding cost ( per item per unit time).

**Decision making and Branching**

1. Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 7.
2. A set of two linear equations with two unknowns x1 and x2 is given below:

ax1 + bx2=m; cx1 + dx2=n. the set has a unique solution x1= md-bn / ad-cd and x2=na-mc / ad-cd provided the denominator ad - cd is not equal to zero. Write a program that will read the values of constants a,b,c,d, m, and n and compute the values of x1 and x2. An appropriate message should be printed if ad - cb =0.

1. Given the list of marks ranging from 0 to 100. Write a program to compute and print the number of students who have obtained marks in the range 81 to 100, 61 to 80, 41 to 60 and 0 to 40. The program should use a minimum number of **if** statements.
2. Admission to a professional course is subject to the following conditions: Marks in Mathematics >= 60, Marks in physics >= 50, marks in Chemistry >= 40, Total in all three subjects >= 200 (or) total in mathematics and physics >= 200. Given the marks in the 3 subjects, write a program to process the applications to list the eligible candidates.
3. Write a program to print a two dimensional square root table, to provide the square root of any number from 0 to 9.9. e.g. the value x will give the square root of 3.2 and y the square root of 3.9.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number | 0.0 | 0.1 | 0.2 | … | 0.9 |
| 0.0 |  |  |  |  |  |
| 1.0 |  |  |  |  |  |
| 2.0 |  |  |  |  |  |
| 3.0 |  |  | **x** |  | **y** |
| … |  |  |  |  |  |
| 9.0 |  |  |  |  |  |

1. Write a program to print the Floyd’s triangle.

1

2 3

4 5 6

7 8 9 10

11 12 … 15

.

79 … 91

1. Modify the Floyd’s triangle to produce the following

1

0 1

1 0 1

0 1 0 1

1 0 1 0 1

1. A cloth showroom has announced the following seasonal discounts on purchase of items:

|  |  |  |
| --- | --- | --- |
| Purchase amount | Discount | |
|  | Mill cloth | Handloom items |
| 0 – 100 | ---- | 5.0% |
| 101 – 200 | 5.0% | 7.5% |
| 201 – 300 | 7.5% | 10.0% |
| Above 300 | 10.0% | 15.0% |

Write a program using switch and if statements to compute the net amount to be paid by a customer.

1. Write a program that will read the values of x and evaluate the following function:

Y ={ 1 for x> 0; 0 for x= 0; -1 for x< 0 }

Using i) nested if statements, ii) else if statements and iii) conditional operator.

**Decision making and Looping**

1. Given a number, write a program using while loop to reverse the digits of a number. E.g. 12345 as 54321.
2. Write a program that computes and prints a table of factorials for any given m.
3. Write a program that compute sum of digits of a given integer number.
4. Write a program to print Fibonacci numbers. 1,1,2,3,5,8,13, 21,… m. Use do---while to print m numbers.
5. Write a program to print the following outputs using for loops.
6. 1 b) $$$$$ c) 1

22 $$$$ 2 2

333 $$$ 3 3 3

4444 $$ 4 4 4 4

55555 $ 5 5 5 5 5

1. Write a program to evaluate the following investment equation:

V= P(1+r)n  and print the tables which would give the value of V for various combination of the following values of P, n and r.

P: 1000, 2000,3000, … 10,000

r: 0.10, 0.11, 0.12, … 0.20

n: 1,2,3, … 10

P: principal amount, V: value of money at the end of n years. V=P(1+r); P = V recursively. i.e. the value of money at the end of first year becomes the principal amount for the next year and so on.

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