Practice Lab Assignment 1

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For this Practice Lab Assignment, you will write basic programs to practice Java syntax.

Instructions

- There are 9 questions in this assignment.
- First download and install JDK and Netbeans from the source/link on the BB.
- Import required packages in all the programs otherwise the programs will not be executed.
- As of now, declare all classes as public just to execute the programs without any warning or error.
- In case of any technical glitch, discuss with TA.

Due Date: Submit your codes on BB by 29th Aug 2024 Midnight.

Grading Criteria

Will be announced later.

Questions

1. Write a Java program to find the factorial of a number. You can create only one class containing main method and write the code of factorial inside that class only.
2. Write a program to input 'n' numbers from the console and calculate maximum of them.
3. Write a program to print all the prime numbers in an array of n elements taken from console.
4. Print integers 1 to N, but print "Fizz" if an integer is divisible by 3, "Buzz" if an integer is divisible by 5, and "FizzBuzz" if an integer is divisible by both 3 and 5.
5. Write the program which lets the user to enter the interest rate, numbers years, and loan amount and computes monthly payment. And, display the monthly payment with the accuracy of two decimal places.

$$monthlyPayment = \frac{loanAmount \times monthlyInterestRate}{1 - \frac{1}{(1 + monthlyInterestRate)^{numberOfYears \times 12}}}$$

6. Write a program that displays current time in GMT in the format hour:minute:second such as 1:45:19. The ***currentTimeMillis*** method in the System class returns the current time in milliseconds since midnight, January 1, 1970, GMT. (1970 was the year when the Unix operating system was formally introduced.) You can use this method to obtain the current time, and then compute the current second, minute, and hour as follows. (use only arithmetic operators to calculate the time)

7. Write a sort method that uses the insertion sort algorithm. Write a test program that reads in 10 double numbers in an array, invokes the method, and display the sorted numbers.

8. Write a program to implement the binary search algorithm to search an element in the sorted list. If the input elements are not sorted, then use the sort (defined in Question above) method before calling the binary search method.

9. Define a class to represent a bank account. Include the following members:

Data members

- Name of the depositor
- Account number
- Type of account
- Balance amount in the account

Member functions

- To assign initial values
- To deposit an amount
- To withdraw an amount after checking the balance
- To display name and balance

Implement a main() method to test the program.

Sample Input:

Enter your choice:

1. Assign Initial Values
2. Deposit
3. Withdraw
4. Display Account Holder Name and Respective Account Balance

The output should be in accordance with the Input choice.