

CSE 1206

Java Practice Problems-1

1. Write a program which prints “Odd Number” if the int variable “number” is odd, or “Even Number” otherwise.
2. Write a program which prints “ONE”, “TWO”,... , “NINE”, “OTHER” if the int variable “number” is 1, 2, ... , 9, or other, respectively. Use (a) a “nested-if” statement; (b) a “switch case-default” statement.
3. Write a program to produce the sum of 1, 2, 3, ..., to 100. Store 1 and 100 in variables lowerbound and upperbound, so that we can change their values easily. Also compute and display the average. The output shall look like:

The sum of 1 to 100 is 5050
The average is 50.5

- Modify the program to use a “while-do” loop instead of “for” loop. Modify the program to use a “do-while” loop.
 - Modify the program to sum from 111 to 8899, and compute the average. Introduce an int variable called count to count the numbers in the specified range (to be used in computing the average)
4. Write a program to find the “sum of the squares” of all the numbers from 1 to 100, i.e. $1*1 + 2*2 + 3*3 + \dots + 100*100$.
 5. Write a program to compute the product of integers from 1 to 10 (i.e., $1*2*3*\dots*10$), as an int.
 6. Write a program to compute the sum of a harmonic series, as shown below, where $n=50000$. The program shall compute the

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sum from left-to-right as well as from the right-to-left. Are the two sums the same? Obtain the absolute difference between these two sums

$$\text{HarmonicMean} = 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}$$

7. Write a program to print the first 20 Fibonacci numbers $F(n)$, where $F(n)=F(n-1)+F(n-2)$ and $F(1)=F(2)=1$. Also compute their average. The output shall look like:

The first 20 Fibonacci numbers are:

1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181
6765 The average is 885.5

8. Write a program that prompts user for three integers. The program shall read the inputs as int; compute the sum, product, minimum and maximum of the three integers; and print the results.
9. Write a program that prompts user for two integers. The program shall read the inputs as int, save in two variables called number1 and number2; swap the contents of the two variables; and print the results.

Enter first integer: 4

Enter second integer: -5

After the swap, first integer is: -5, second integer is: 4

10. Write a program that prompts user for a positive integer. The program shall read the input as int; and print the “reverse” of the input integer. For examples,
Enter a positive integer: 12345

The reverse is: 54321

11. Write a program that prompts user for a positive integer. The program shall read the input as int; compute and print the sum of all its digits. For examples,

Enter a positive integer: 12345

The sum of all digits is: 15

12. Write a program that prompts user for an integer between 0-10 or 90-100. The program shall read the input as int; and repeat until the user enters a valid input. For examples,

Enter a number between 0-10 or 90-100: -1

Invalid input, try again...

Enter a number between 0-10 or 90-100: 50

Invalid input, try again...

Enter a number between 0-10 or 90-100: 95

You have entered: 95

13. Write a program called SquarePattern that prompts user for the size (a non-negative integer in int); and prints the following square pattern.

Enter the size: 5

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14. Write separate programs that prompts user for the size (a non negative integer in int); and prints each of the patterns as shown:

Enter the size: 8

[illegible]

Enter the size: 8

Figure 1 consists of five sub-diagrams labeled (a) through (e), each showing a 10x10 grid of cells. The cells are represented by small black squares. In (a), only the cell at (0,0) is present. In (b), cells are present along the main diagonal from (0,0) to (9,9). In (c), cells form a triangular shape, with row i containing $i+1$ cells. In (d), the pattern is more complex, with cells appearing in a staggered fashion. In (e), cells are concentrated in the first few rows, with the first row having 10 cells and subsequent rows having fewer cells.

Enter the rows: 6

Figure 1 shows four types of triangles used in the construction of the Sierpinski triangle. (a) Type 1: A single black triangle. (b) Type 2: A black triangle with a white triangle in the center. (c) Type 3: A black triangle with two white triangles in the center. (d) Type 4: A black triangle with three white triangles in the center.

15. Write a program to compute the greatest common divisor (GCD) of two given integers.

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16. Write a program that prompts the user for a year and prints true if the given year is a leap year. A year is a leap year if it is divisible by 4 but not by 100, or it is divisible by 400.
17. Write a program that prompts the user for an upper bound (a positive integer), and lists all the prime numbers less than or equal to it.

Please enter the upper bound: 5

1
2
3
5

18. Write a program to convert an input binary string into its equivalent decimal number. Your output shall look like:

Enter a Binary string: 1011

The equivalent decimal number for binary 1011 is:

11 Enter a Binary string: 1234

error: invalid binary string 1234

