

Programming Languages In Practice Part II

C++

Practice 4

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11.12.2022

Task 1

Power of 2

Write a program to calculate a power of 2 for an exponent ranging from 0 to 16. Use pow() function, eg. $2^4 = \text{pow}(2,4)$.

```
2 to the power of 0 is 1
2 to the power of 1 is 2
2 to the power of 2 is 4
2 to the power of 3 is 8
2 to the power of 4 is 16
2 to the power of 5 is 32
2 to the power of 6 is 64
2 to the power of 7 is 128
2 to the power of 8 is 256
2 to the power of 9 is 512
2 to the power of 10 is 1024
2 to the power of 11 is 2048
2 to the power of 12 is 4096
2 to the power of 13 is 8192
2 to the power of 14 is 16384
2 to the power of 15 is 32768
2 to the power of 16 is 65536
```

Task 2

Arithmetic mean

Write a program that calculates the arithmetic mean of n numbers entered by the user using for and while loops.

```
Enter the number of numbers you want to count the average of: 3
Enter number: 4
Enter number: 5
Enter number: -7
Arithmetic mean of 3 numbers is 0.666667
```

```
Enter the number of numbers you want to count the average of: -8
The number of numbers must be positive!
```

Task 3

Do while

Use the do while loop in the previous program to recalculate the arithmetic mean if the user enters the letter T.

```
Enter the number of numbers you want to count the average of: -8
The number of numbers must be positive!
If you want to count the average again, press T t
Enter the number of numbers you want to count the average of: 4
Enter number: 1
Enter number: 2
Enter number: 3
Enter number: 4
Arithmetic mean of 4 numbers is 2.5
If you want to count the average again, press T n
```

Task 4

Sum of digits

Write a program that calculates the number of entered digits and their sum for any number n . Use modulo division, eg. $(123 \% 10 = 3)$. For example, for the number 123, the number of digits is 3 and their sum is 6.

```
Enter number 123  
The given number has 3 digits and the sum of them is 6
```

Task 5

Reverse number

Write a program that reverses the order of the digits of an integer, e.g. for 2391, if you reverse the order of the digits the result would be 1932.

```
Enter number: 12345  
Reverse number: 54321
```

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