

Programming C/C++ Lab

Lab 03

1. Input an integer $N > 0$. Write a program to calculate the squares and the cubes of the numbers from 0 to N using the below format. Example, $N = 10$:

Number	Square	Cube
0	0	0
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

2. We need the amount of money of 30,000VND by selecting the appropriate number of 1,000VND; 2,000VND; 5,000VND; 10,000VND notes. Write a program to calculate all possibilities.

Example: 10 notes of 1,000VND + 2 notes of 5,000VND + 1 note of 10,000 VND

3. Write a program to input 2 integers and an operator (+ - * /) then calculate the result of the expression. Note: use character type for the operator. To input one character, use the function `getchar()` or `scanf` as shown below

```
char operator;  
  
int num1, num2;  
  
scanf ("%d%c%d", &num1, &operator, &num2);
```

Example: input $1+2 \rightarrow$ result = $1 + 2 = 3$. Note there is no space between the number and the operator in the sample code above

4. Write a program to read a positive integer number and check whether it is Perfect Number or not. Perfect number is an integer that sum of all its divisors equal to the number itself

Example: 6 is a perfect number since $1 + 2 + 3 = 6$

5. Input an integer $N > 0$. Calculate the number of digits. Example: $N = 868 \rightarrow 3$ digits

6. Input two positive integers A < B. Find the Greatest Common Divisor (GCD) of A and B

7. Input an integer N > 0 and draw the following shape. Example N = 5

1
22
333
4444
55555

8. Input an integer N >0 and draw the following shape. Example N = 5

1
22
333
4444
55555