Міністерство освіти і науки України
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# Звіт

**про виконання розрахунково-графічних робіт блоку № 7**

***з дисципліни:*** «Основи програмування» до:

ВНС Розрахунково-графічних робіт № 1-4 Практичних
Робіт до блоку № 7

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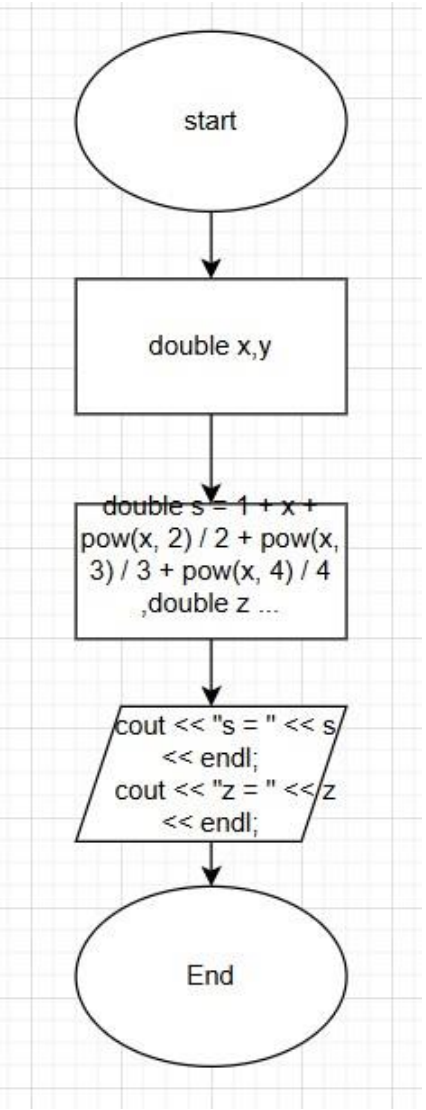
## Завдання 1: VNS_Task_1_Variant_3(15 хв)

```cpp
#include <iostream>
#include <cmath>

using namespace std;

int main()
{
    double x = 1.2;
    double y = -0.8;

    double s = 1 + x + pow(x, 2) / 2 + pow(x, 3) / 3 + pow(x, 4) / 4; // pow = сте

    double z = pow(sin(x), 3) + pow(cos(y), 2);

    cout << "s = " << s << endl;
    cout << "z = " << z << endl;

    return 0;


}
```

```
s = 4.0144
z = 1.29506
```

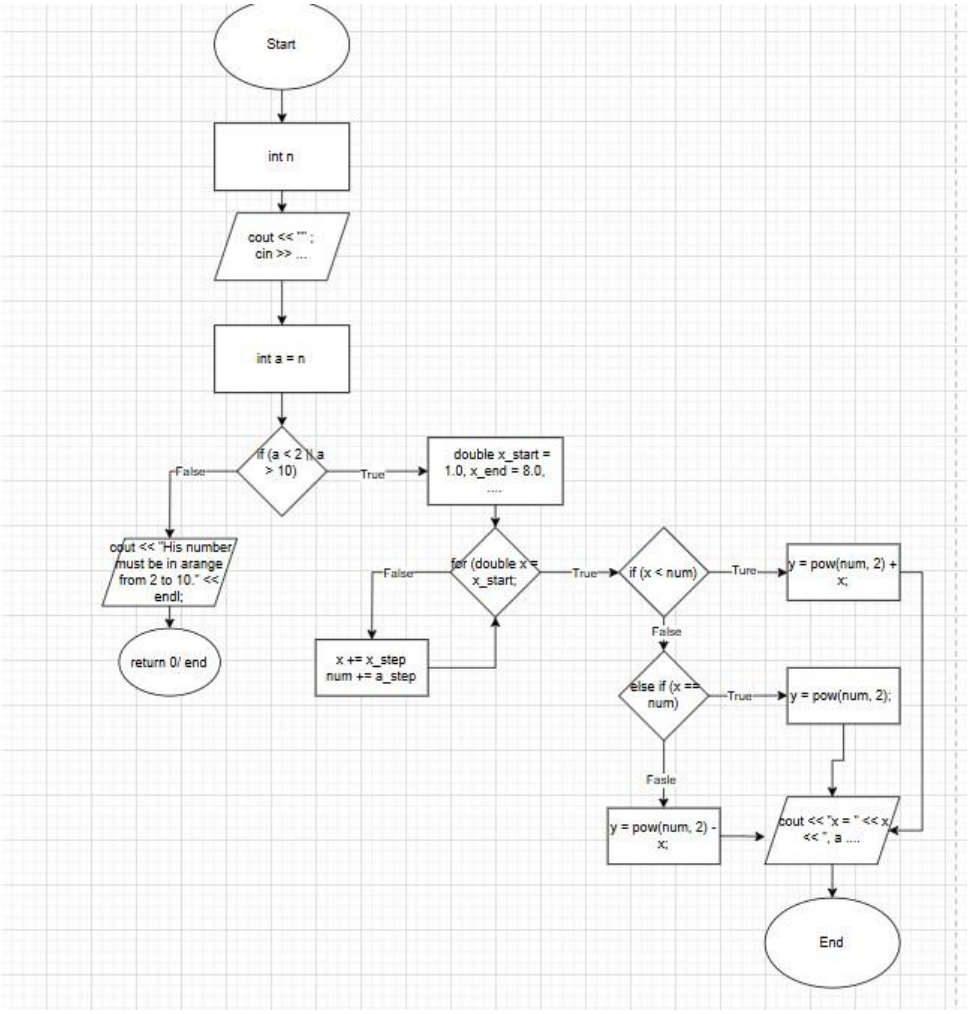

start
double x,y
double s = 1 + x + pow(x, 2) / 2 + pow(x, 3) / 3 + pow(x, 4) / 4 ,double z ...
cout << "s = " << s << endl;
cout << "z = " << z << endl;
End

## Завдання 2: VNS_Task_2_Variant_17(35 хв)

```cpp
#include <iostream>
#include <cmath>
using namespace std;

int main()
{
    int n;
    cout << "Enter number of student: ";
    cin >> n;

    int a = n;

    if (a < 2 || a > 10)
    {
        cout << "His number must be in arange from 2 to 10." << endl;
        return 1;
    }

    double x_start = 1.0, x_end = 8.0, x_step = 0.5;
    double a_start = 2.0, a_end = 10.0, a_step = 1.0;

    for (double x = x_start; x <= x_end; x += x_step)
    {
        for (double num = a_start; num <= a_end; num += a_step)
        {
            double y;
            if (x < num)
            {
                y = pow(num, 2) + x;
            }
            else if (x == num)
            {
                y = pow(num, 2);
            }
            else
{
                y = pow(num, 2) - x;
            }

            cout << "x = " << x << ", a = " << num << " -> y = " << y << endl;
```

```cpp
            cout << "x = " << x << ", a = " << num << " -> y = " << y << endl;
        }
    }




    return 0;
}
```

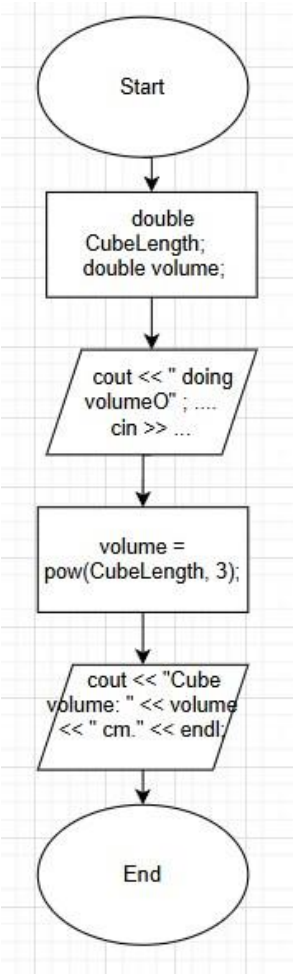
```
Enter number of student: 5
x = 1, a = 2 -> y = 5
x = 1, a = 3 -> y = 10
x = 1, a = 4 -> y = 17
x = 1, a = 5 -> y = 26
x = 1, a = 6 -> y = 37
x = 1, a = 7 -> y = 50
x = 1, a = 8 -> y = 65
x = 1, a = 9 -> y = 82
x = 1, a = 10 -> y = 101
x = 1.5, a = 2 -> y = 5.5
x = 1.5, a = 3 -> y = 10.5
x = 1.5, a = 4 -> y = 17.5
x = 1.5, a = 5 -> y = 26.5
x = 1.5, a = 6 -> y = 37.5
x = 1.5, a = 7 -> y = 50.5
x = 1.5, a = 8 -> y = 65.5
x = 1.5, a = 9 -> y = 82.5
x = 1.5, a = 10 -> y = 101.5
x = 2, a = 2 -> y = 4
x = 2, a = 3 -> y = 11
x = 2, a = 4 -> y = 18
x = 2, a = 5 -> y = 27
x = 2, a = 6 -> y = 38
x = 2, a = 7 -> y = 51
x = 2, a = 8 -> y = 66
```


Start
int n
cout << "" ;
cin >> ...
int a = n
if (a < 2 || a > 10)
False
True
cout << "His number must be in arange from 2 to 10." << endl;
return 0/ end
double x_start = 1.0, x_end = 8.0, ....
for (double x = x_start;
False
True
x += x_step
num += a_step
if (x < num)
Ture
y = pow(num, 2) + x;
False
else if (x == num)
True
y = pow(num, 2);
Fasle
y = pow(num, 2) - x;
cout << "x = " << x << ", a ....
End

**Завдання 3: VNS_Task_3_Variant_23(20 хв)**

```cpp
#include <iostream>
#include <cmath>
using namespace std;

int main()
{

    double CubeLength;
    double volume;


    cout << "Enter lenght cube : ";

    cin >> CubeLength;

    volume = pow(CubeLength, 3);

    cout << "Cube volume: " << volume << " cm." << endl;



    return 0;
}
```

```
Enter lenght cube : 9.5
Cube volume: 857.375 cm.
```


Start
double CubeLength; double volume;
cout << " doing volumeO" ; .... cin >> ...
volume = pow(CubeLength, 3);
cout << "Cube volume: " << volume << " cm." << endl;
End

**Завдання 4: VNS_Task_4_Variant_18(10 хв)**

```cpp
#include <iostream>
using namespace std;

int main()
{
    double price_for_kg;
    double weight;
    double price;

    cout << "Enter prize for 1 kilo: ";
    cin >> price_for_kg;


    cout << "Weight |  Prize  " << endl;
    cout << "-------------------------" << endl;

    for (weight = 100; weight <= 1000; weight += 100)
    {
        price = (price_for_kg * weight) / 1000;

        cout << weight << "  |  " << price << endl;
    }

    return 0;
}
```

```
Enter prize for 1 kilo: 8
Weight |  Prize
-------------------------
100  |  0.8
200  |  1.6
300  |  2.4
400  |  3.2
500  |  4
600  |  4.8
700  |  5.6
800  |  6.4
900  |  7.2
1000  |  8
```

**Завдання 5: Algotester_task_5(30 хв)**

```cpp
#include <iostream>
using namespace std;

int main()
{
    int n;
    cin >> n;

    int supermanWins = 0;
    int batmanWins = 0;

    for (int i = 0; i < n; i++)
    {
        int a, b, c;
        cin >> a >> b >> c;

        int nim_sum = a ^ b ^ c;

        if (nim_sum != 0)
        {
            supermanWins++;
        }
        else
        {
            batmanWins++;
        }
    }
    cout << supermanWins << "-" << batmanWins;


    return 0;
}
```

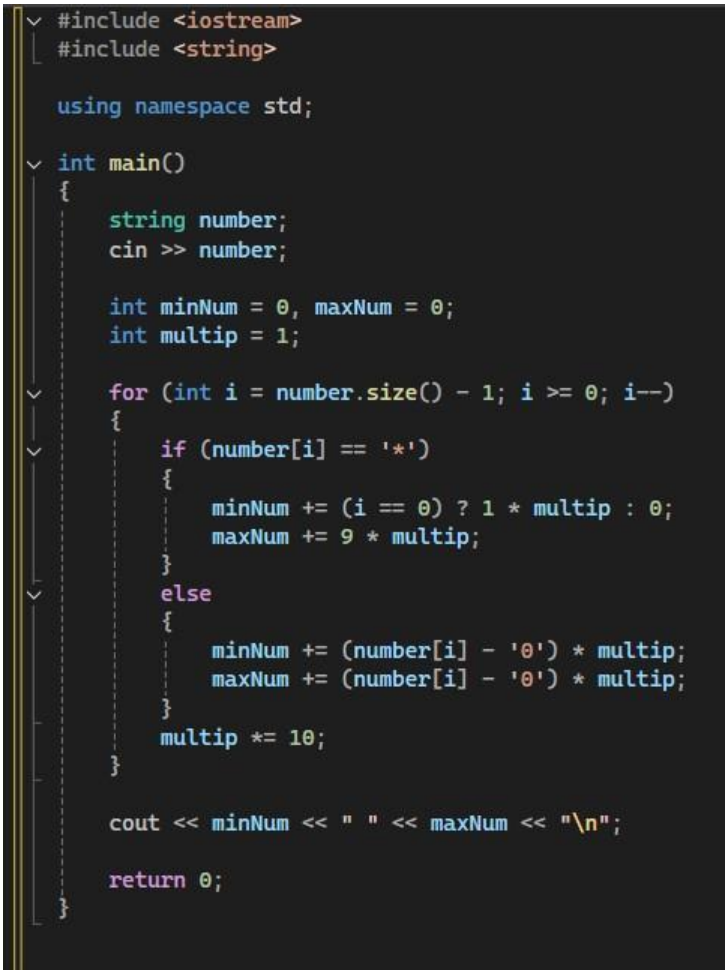
## Завдання 6: Algotester_task_6(10 хв)

```cpp
#include<iostream>
using namespace std;

int main()
{
    int n;
    cin >> n;

    int* array = new int[n];
    for (int i = 0; i < n; i++)
    {
        cin >> array[i];
    }

    int crossings = 0;

    bool isEvenSide = array[0] % 2 == 0;

    for (int i = 1; i < n; i++)
    {
        bool currentIsEven = array[i] % 2 == 0;
        if (currentIsEven != isEvenSide)
        {
            crossings++;
        }
        isEvenSide = currentIsEven;
    }

    cout << crossings << endl;



    delete[] array;
    return 0;
}
```

## Завдання 7: Algotester_task_7(35 хв)

```cpp
#include<iostream>
using namespace std;

int main()
{
    int n;
    cin >> n;
    char* array = new char[n];

    for (int i = 0; i < n; ++i)
    {
        cin >> array[i];
    }

    int V = 0;
    int K = 0;
    int win_v = 0;
    int win_k = 0;

    for (int i = 0; i < n; ++i)
    {
        if (array[i] == 'V')
        {
            ++V;
        }
        if (array[i] == 'K')
        {
            ++K;
        }

        if (V >= 11 && (V - K) >= 2)
        {
            ++win_v;
            V = 0;
            K = 0;
        }

        if (K >= 11 && (K - V) >= 2)
        {
            ++win_k;
            V = 0;
            K = 0;
        }
    }

    cout << win_k << ':' << win_v << endl;

    if (V != 0 || K != 0) {
        cout << K << ':' << V;
    }

    return 0;
}
```

## Завдання 8: Algotester_task_8(20 хв)



```cpp
#include <iostream>
#include <string>

using namespace std;

int main()
{
    string number;
    cin >> number;

    int minNum = 0, maxNum = 0;
    int multip = 1;

    for (int i = number.size() - 1; i >= 0; i--)
    {
        if (number[i] == '*')
        {
            minNum += (i == 0) ? 1 * multip : 0;
            maxNum += 9 * multip;
        }
        else
        {
            minNum += (number[i] - '0') * multip;
            maxNum += (number[i] - '0') * multip;
        }
        multip *= 10;
    }

    cout << minNum << " " << maxNum << "\n";

    return 0;
}
```