Task 1:

Question 1 (Switch Statement)
Write a program to ask user two double inputs **num1**, **num2** and operator **op** (+,/,*,-). Perform **op** operation on **num1** and **num2**. Perform using **Switch statement.**

Input	Output
Num1 = 8 Num2 = 6 Op = +	Sum is: 14
Num1 = 8 Num2 = 6 Op = -	Difference is: 2
Num1 = 2 Num2 = 3 Op = *	Product is: 6
Num1 = 2 Num2 = 3 Op = /	Division is: 0.66
Num1 = 2 Num2 = 0 Op = /	Cannot divide by zero

Solution:

```
#include<iostream>
using namespace std;
int main(){
    double num1,num2;
    char ch;
    cout<<"Enter first number: ";
    cin>>num1;
    cout<<"Enter second number: ";
    cin>>num2;
    cout<<"Enter operator: ";
    cin>>ch;

    switch(ch){
                case '+':
                     cout<<"Sum is "<< num1+num2;
                     break;
                case '-':
                     cout<<"Difference is "<< num1-num2;
```

```
                    break;
               case '*':
                    cout<<"Product is "<< num1*num2;
                    break;
               case '/':
                    if(num2==0){
                    cout<<"Cannot divide by zero";
                    }
                    else
                    cout<<"Division is "<< num1/num2;
                    break;
                    }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter first number: 5
Enter second number: 4
Enter operator: *
Product is 20
Press any key to continue . . .
```

Task 2:

Question 2 (Nested Loops)

Write a program to ask user input **rows**, **cols**. Iterate loop to perform following task:

- Outer loop should iterate from **1 to rows**.
- Inner loop should iterate from **1 to cols**.
- Print **'0'** in inner loop with spaces. (**e.g. cout<<0<<" ";**)
- Print **newline** in outer loop.

Input	Output
Rows = 2 Cols = 3	0 0 0 0 0 0
Rows = 3 Cols = 1	0 0 0

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter rows: ";
    cin>>rows;
    cout<<"Enter columns: ";
    cin>>cols;

    for( int i = 1; i<=rows; i++){
         for(int j = 1; j<=cols; j++){
         cout<<"0 ";}
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter rows: 3
Enter columns: 1
0
0
0

Press any key to continue . . .
```

Task 3:

Question 3 (Modify question2)

Modify question 2 to achieve following output:

Input	Output
Rows = 2 Cols = 3	1 2 3 1 2 3
Rows = 3 Cols = 1	1 1 1

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter rows: ";
    cin>>rows;
    cout<<"Enter columns: ";
    cin>>cols;

    for( int i = 1; i<=rows; i++){
         for(int j = 1; j<=cols; j++){
         cout<<j<<" ";}
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter rows: 2
Enter columns: 3
1 2 3
1 2 3

Press any key to continue . . .
```

Task 4 (a):

Question 4 (Modify question2)

Modify question 2 to achieve following output:

Input	Output
Rows = 2 Cols = 3	1 1 1 2 2 2
Rows = 3 Cols = 1	1 2 3

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter rows: ";
    cin>>rows;
    cout<<"Enter columns: ";
    cin>>cols;

    for( int i = 1; i<=rows; i++){
         for(int j = 1; j<=cols; j++){
         cout<<i<<" ";}
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter rows: 2
Enter columns: 3
1 1 1
2 2 2
```

Task 4 (b):

Question 4 (Modify question2)

Modify question 2 to achieve following output:

Input	Output
Rows = 2 Cols = 3	1 2 3 4 5 6
Rows = 3 Cols = 1	1 2 3

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols,i,j,num=1;
    cout<<"Enter rows: ";
    cin>>rows;
    cout<<"Enter columns: ";
    cin>>cols;

    for(i = 1; i<=rows; i++){
         for(j = 1; j<=cols; j++){
         cout<<num<<" ";
         num++;
         }
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter rows: 4
Enter columns: 5
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
```

Task 5 (a):

Question 5 (Modify question2)

Modify question 2 to take only one input **n** and achieve following output:

Input	Output
N = 3	1 1 2 1 2 3

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter number: ";
    cin>>rows;

    for( int i = 1; i<=rows; i++){
         for(int j = 1; j<=i; j++){
         cout<<j<<" ";}
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter number: 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

Task 5 (b):

Question 5 (Modify question4)

Modify question 4 to take only one input **n** and achieve following output:

Input	Output
N = 3	1 2 3 1 2 1

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter number: ";
    cin>>rows;

    for( int i = rows; i>=1; i--){
         for(int j = 1; j<=i; j++){
         cout<<j<<" ";}
         cout<<endl;
         }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter number: 3
1 2 3
1 2
1
```

Task 6:

Question 6 (Modify question5)

Modify question 5 to take only one input **n** and achieve following output:

Input	Output
N = 3	1 2 3 1 2 1
N = 5	1 2 3 4 5 1 2 3 4 1 2 3 1 2 1

Solution:

```
#include<iostream>
using namespace std;
int main(){
    int rows,cols;
    cout<<"Enter number: ";
    cin>>rows;

    for( int i = 0; i<=rows; i++){

          for(int s = 0; s<=i; s++){
                  cout<<"  ";
                  }
          for(int j = 1; j<=rows-i; j++){
          cout<<j<<" ";}
          cout<<endl;
          }

 cout<<endl;
 system("PAUSE");
 return 0;
}
```

Output:

```
Enter number: 5
  1 2 3 4 5
    1 2 3 4
      1 2 3
        1 2
          1
```