1. Write a program in C++ to find the sum of first 10 natural numbers.

   Code:

   Using while loop:

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

int main()
{
	int sum = 0, i = 1;
	while (i <= 10)
	{
		sum += i;
		i++;
	}
	cout << "Sum of first ten natural numbers: " << sum;
	cout << endl;
	return 0;
}
```

Using do-while loop:

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

int main()
{
	int sum = 0, i = 0;
	do
	{
		i++;
		sum += i;
	}while (i < 10);
	cout << "Sum of first ten natural numbers: " << sum;
	cout << endl;
	return 0;
}
```

Using for loop:

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

int main()
{
	int sum = 0, i = 0;
	for (i = 1; i <= 10; i++)
	{
		sum += i;
	}
	cout << "Sum of first ten natural numbers: " << sum;
	cout << endl;
	return 0;
}
```

Output:

```
Sum of first ten natural numbers: 55

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Press any key to close this window . . .
```

2. Write a C++ program to Print Table of any Number.

   Code:

   Using while loop:

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

int main()
{
	int n, i = 1;
	cout << "Enter any number: ";
	cin >> n;
	while (i <= 10)
	{
		cout << n << " * " << i << " = " << n*i << endl;
		i++;
	}
	cout << endl;
	return 0;
}
```

   Using for loop:

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

int main()
{
	int n;
	cout << "Enter any number: ";
	cin >> n;
	for (int i = 1; i <= 10; i++)
	{
		cout << n << " * " << i << " = " << n*i << endl;
	}
	cout << endl;
	return 0;
}
```

   Output:

```
Enter any number: 8
8 * 1 = 8
8 * 2 = 16
8 * 3 = 24
8 * 4 = 32
8 * 5 = 40
8 * 6 = 48
8 * 7 = 56
8 * 8 = 64
8 * 9 = 72
8 * 10 = 80
```

3. Write a Program to Generate Factorial. A Certain Number Factorial of any number is the product of an integer and all the integers below it for example factorial of 4 is: 4! = 4 * 3 * 2 * 1 = 24.

   Code:

   Using while loop:

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

int main()
{
	int temp = 1, n, i = 1;
	cout << "Enter any number: ";
	cin >> n;
	while (i <= n)
	{
		temp = temp * i;
		i++;
	}
	cout << "Factorial of " << n << " is:" << temp << endl;
	cout << endl;
	return 0;
}
```

   Using for loop:

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

int main()
{
	int temp = 1, n;
	cout << "Enter any number: ";
	cin >> n;
	for (int i =1; i <= n; i++)
	{
		temp = temp * i;
	}
	cout << "Factorial of " << n << " is:" << temp << endl;
	cout << endl;
	return 0;
}
```

   Output:

```
Enter any number: 9
Factorial of 9 is:362880
```

4. Write a C++ program to generate Fibonacci sequence up to a certain number input by user.

   Code:

```cpp
#include <iostream>
using namespace std;
int main()
{
	int n, next = 0, f = 0, s = 1, sum = 0;
	cout << "Enter any number: ";
	cin >> n;
	cout << f << " , " << s;
	for (int i = 1; i < (n-1); i++)
	{
		next = f + s;
		f = s;
		s = next;
		cout << " , " << next;
	}
	cout << endl;
	return 0;
}
```

   Output:

```
Enter any number: 8
0 , 1 , 1 , 2 , 3 , 5 , 8 , 13
```

5. Write a C++ program to print full pyramid using * where the height of pyramid is input by user using for loop.

   Code:

```cpp
#include <iostream>
using namespace std;
int main()
{

	for (int i = 0; i <= 5; i++)
	{
		for (int j = 0; j <= 9; j++)
		{
			if (j > 4 - i && j < 4+i)
			{
				cout << "*";
			}
			else
			{
				cout << " ";
			}
		}
		cout << endl;
	}


	cout << endl;
	return 0;
}
```

   Output:

```
    *
   ***
  *****
 *******
*********
```

6. Write a C++ Program to check whether a given number is a power of two or not.
   Code:

```
#include <iostream>
using namespace std;
int main()
{
	int num, q, r, temp;
	cout << "Enter any number: ";
	cin >> num;
	temp = num;
	do
	{
		q = num / 2;
		r = num % 2;
		num = q;
	} while ( q > 1);
	if (r == 0)
	{
		cout << temp << " is power of 2.";
	}
	else
	{
		cout << temp << " is not a power of 2.";
	}
	cout << endl;
	return 0;
}
```

   Output:

```
Enter any number: 64
64 is power of 2.
```

```
Enter any number: 48
48 is not a power of 2.
```

7. Write a C++ program to reverse the digits of a given integer.
   Code:

```
#include <iostream>
using namespace std;
int main()
{
	int num, q, rem;
	cout << "Enter any number: ";
	cin >> num;
```

```
        if (num < 10)
        {
                cout << num;
        }
        else
        {
                cout << "Reverse digit is: ";
                do
                {
                        q = num / 10;
                        rem = num % 10;
                        num = q;
                        cout << rem;
                } while (q != 0);
        }
        cout << endl;
        return 0;
}
```

Output:

```
Enter any number: 987654321
Reverse digit is: 123456789
```

8. Write a program in C++ which prints the numbers from 1 to 150 except the multiples of 10. Make use of continue statement.

   Code:

```
#include <iostream>
using namespace std;
int main()
{
        for (int i = 1; i <= 150; i++)
        {
                if (i % 10 == 0)
                {
                        continue;
                }
                else
                {
                        cout << " " << i;
                }
        }
        cout << endl;
        return 0;
}
```

   Output:

```
 1 2 3 4 5 6 7 8 9 11 12 13 14 15 16 17 18 19 21 22 23 24 25 26 27 28 29 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47
 48 49 51 52 53 54 55 56 57 58 59 61 62 63 64 65 66 67 68 69 71 72 73 74 75 76 77 78 79 81 82 83 84 85 86 87 88 89 91 92
 93 94 95 96 97 98 99 101 102 103 104 105 106 107 108 109 111 112 113 114 115 116 117 118 119 121 122 123 124 125 126 12
7 128 129 131 132 133 134 135 136 137 138 139 141 142 143 144 145 146 147 148 149
```

9. Write a C++ program to find sum of digits of a number. Sum of digits means add all the digits of any number, for example we take any number like 358. Its sum of all digit is 3+5+8=16.

   Code:

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

```
int main()
{
	int num, q, rem, sum = 0;
	cout << "Enter any number: ";
	cin >> num;


	if (num < 10)
	{
		cout << num;
	}
	else
	{
		do
		{
			q = num / 10;
			rem = num % 10;
			num = q;
			sum += rem;
		} while (q != 0);
	}
	cout << "Sum of digits is: " << sum;
	cout << endl;
	return 0;
}
```

Output:

```
Enter any number: 8932
Sum of digits is: 22
```

10. Write a program in C++ to check whether a number is prime or not.

Code:

```
#include <iostream>
using namespace std;
int main()
{
	int num, c = 0;
	cout << "Enter any number: ";
	cin >> num;

	for (int i = 2; i <= num / 2; i++)
	{
		if (num % i == 0)
		{
			c++;
		}
	}
	if (c)
	{
		cout << "Entered number is not prime!";
	}
	else
	{
		cout << "Entered number is prime!";
	}
	cout << endl;
	return 0;
}
```

Output:

```
Enter any number: 37
Entered number is prime!
```