



Department of Mechanical Engineering

Lab # 04: Fundamentals of Programming, (FOF)

Prepared by:

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Home task:

Question #01: Write a program in C++ that prints the numbers from 1 to 150 except the multiples of 10. Make use of the continue statement.

Input:

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int x = 1;
```

```
    while (x <= 150) {
```

```
        if (x % 10 == 0) {
```

```
            x++;
```

```
            continue;
```

```
        }
```

```
        cout << num << " ";
```

```
        x++;
```

```
    }
```

```
    cout << endl;
```



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```
return 0;

}
```

Output:

The screenshot shows a C++ program in a code editor and its output in a terminal window. The program, named `main.cpp`, includes `<iostream>` and uses the `std` namespace. It defines a `main` function where an integer `x` is initialized to 1. A `while` loop runs as long as `x` is less than or equal to 150. Inside the loop, an `if` statement checks if `x` is a multiple of 10 (`x % 10 == 0`). If true, it increments `x` and uses `continue` to skip the rest of the loop body. If false, it prints `x` followed by a space using `cout << x << " "`, increments `x`, and continues the loop. After the loop, it prints a newline and returns 0. The terminal output shows the sequence of numbers printed: 1 through 150, with all multiples of 10 (10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150) omitted. A `BANDICAM` watermark is visible in the bottom right corner of the terminal window.

```
main.cpp
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int x = 1;
6     while (x <= 150) {
7         if (x % 10 == 0) {
8             x++;
9             continue;
10        }
11        cout << x << " ";
12        x++;
13    }
14
15    cout << endl;
16    return 0;
17 }
18
```

input

```
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
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
96 97 98 99 101 102 103 104 105 106 107 108 109 111 112 113 114 115 116 117 118 119 121 122 123 124 125 126 127
132 133 134 135 136 137 138 139 141 142 143 144 145 146 147 148 149
```

Program finished with exit code 0

Question #02:Write a C++ program to find the sum of digits of a number. The sum of digits means adding all the digits of any number, for example, we take any number like 358. Its sum of all digits is 3+5+8=16.



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Input:

```
#include <iostream>

using namespace std;

int main () {

    int a, b, c;

    cout <<"Enter a number here:";

    cin >>a;

    while (a>0) {

        b=a%10;

        c+=b;

        a=a/10;

    }

    cout <<"The sum is :"<<c;

    return 0;

}
```

Output:

The screenshot displays a C++ program in a code editor and its execution in a console window. The code editor shows the following code:

```
main.cpp
1 #include <iostream>
2 using namespace std;
3 int main () {
4     int a, b, c;
5     cout <<"Enter a number here:";
6     cin >>a;
7     while (a>0) {
8         b=a%10;
9         c+=b;
10        a=a/10;
11    }
12    cout <<"The sum is :"<<c;
13    return 0;
14 }
```

The console window shows the program's output:

```
Enter a number here:67
The sum is :13
...Program finished with exit code 0
Press ENTER to exit console.
```

The console window also shows a "BANDICAM" watermark in the bottom right corner.



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Question #03: Write a program in C++ to check whether a number is prime or not.

Input:

```
#include <iostream>

using namespace std;

int main() {
    int a;
    bool pr = true;
    cout << "Enter a number: ";
    cin >> a;

    if (a <= 1) {
        pr = false;
        for (int i = 2; i <= a / 2; i++) {
            if (a % i == 0) {
                pr = false;
                break;
            }
        }
    }

    if (pr) {
        cout << a << " The given number is a prime number." << endl;
    } else {
        cout << a << " The given number is a prime number." << endl;
    }

    return 0;
}
```

Output:

```
main.cpp
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int a;
6     bool pr = true;
7     cout << "Enter a number: ";
8     cin >> a;
9
10    if (a <= 1) {
11        pr = false;
12        for (int i = 2; i <= a / 2; i++) {
13            if (a % i == 0) {
14                pr = false;
15                break;
16            }
17        }
18    }
19
20    if (pr) {
21        cout << a << " The given number is a prime number." << endl;
22    } else {
23        cout << a << " The given number is a prime number." << endl;
24    }
25
26    return 0;
27 }
28
```

input

Enter a number: 68
68 The given number is a prime number.

...Program finished with exit code 0
Press ENTER to exit console.

