Minhaj University Lahore

Assignment No:	3	**Mid** ○	**Final** ◉
Course Title & Code:	PF		
Submitted By:	Maleha Majid		
Registration No:	2024F-mulug-0675		
Semster/Class/Section:	Semester 1/section "B"		
Submitted To:	Sir daniyal		
Due Date:	**Outline**	**Hard Copy**	
Student Signature:	maleha		

Note: *Please avoide cutting/ overwriting in any of the above fields.
***Complete the Task on standard A4 size papers/assignment pages.**

***For Instructor's use only.**

Total Marks:	
Obtaind Marks:	
Signatures:	

Faculty of CS/IT,

Minahaj University Lahore

ASSIGNMENT NO 3

1. **Write a program to check if a number entered by the user is positive, negative, or zero using if-else.**

   Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    if (num > 0) {
        cout << "The number is positive" << endl;
    }
    else if (num < 0) {
        cout << "The number is negative" << endl;
    }
    else {
        cout << "The number is zero." << endl;
    }
    return 0;
}
```

2. **Write a program that takes a number as input and checks whether it is even or odd using if else.**

   Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int num=10;
    cout << "Enter the number: "
    if (num % 2 == 0) {
        cout << "The number is even." << endl;
    }
    else {
        cout << "The number is odd." << endl;
    }
    return 0;
```

```
}
```

3. **Write a program to find the largest of three numbers using if-else.**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
   int num1=8, num2=9, num3=10;
   cout << "Enter the numbers: ";
   if (num1 >= num2 && num1 >= num3) {
      cout << "The largest number is " << num1 << endl;
   }
   else if (num2 >= num1 && num2 >= num3) {
      cout << "The largest number is " << num2 << endl;
   }
   else {
      cout << "The largest number is " << num3 << endl;
   }
   return 0;
}
```

4. **Write a program that asks the user to enter marks and determines the grade using multiple if else:**

- **Marks ≥ 90: Grade A**
- **Marks ≥ 80: Grade B**
- **Marks ≥ 70: Grade C**
- **Marks ≥ 60: Grade D**
- **Otherwise: Fail**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
   int marks;
   cout << "Enter the marks: ";
   cin >> marks;
   if (marks >= 90) {
      cout << "Grade A" << endl;
   }
   else if (marks >= 80) {
      cout << "Grade B" << endl;
   }
```

```
    else if (marks >= 70) {
        cout << "Grade C" << endl;
    }
    else if (marks >= 60) {
 cout << "Grade D" << endl;
    }
    else {
        cout << "Fail" << endl;
    }
    return 0;
}
```

5. **Write a program that checks whether a year entered by the user is a leap year or not using if else.**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int year;
    cout << "Enter a year: ";
    cin >> year;
    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
        cout << year << " is a leap year." << endl;
    }
    else {
        cout << year << " is not a leap year." << endl;
    }

    return 0;
}
```

6. **Write a program to check whether a character entered by the user is a vowel or consonant using if-else.**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    char ch;
    cout << "Enter a character: ";
    cin >> ch;
    ch = tolower(ch);
    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
        cout << ch << " is a vowel." << endl;
    }
    else {
```

```
        cout << ch << " is a consonant." << endl;
    }
    return 0;
}
```

7. **Write a program to calculate the electricity bill based on the following conditions:**
   - **Up to 100 units: ₹5 per unit**
   - **101 to 300 units: ₹7 per unit**
   - **Above 300 units: ₹10 per unit**
   - **Display the total bill.**

   Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int units;
    float bill;
    cout << "Enter the number of units consumed: ";
    cin >> units;
    if (units <= 100) {
        bill = units * 5;
    }
    else if (units <= 300) {
        bill = (units * 5) + ((units - 100) * 7);
    }
    else {
        bill = (units * 5) + (units * 7) + ((units - 300) * 10);
    }
    cout << "Total electricity bill: ₹" << bill << endl;
    return 0;
}
```

8. **Write a program that takes an integer from the user and determines whether it is a multiple of both 3 and 5 using if.**

   Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter an integer: ";
    cin >> num;
    if (num % 3 == 0 && num % 5 == 0) {
        cout << num << " is a multiple of both 3 and 5." << endl;
    }
    else {
        cout << num << " is not a multiple of both 3 and 5." << endl;
```

```
    }
    return 0;
}
```

9. **Write a program to check whether an entered character is uppercase, lowercase, digit, or special symbol using multiple if-else.**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    char ch;
    cout << "Enter a character: ";
    cin >> ch;
    if (ch >= 'A' && ch <= 'Z') {
        cout << "The character is an uppercase letter." << endl;
    }
    else if (ch >= 'a' && ch <= 'z') {
        cout << "The character is a lowercase letter." << endl;
    }
    else if (ch >= '0' && ch <= '9') {
        cout << "The character is a digit." << endl;
    }
    else {
        cout << "The character is a special symbol." << endl;
    }

    return 0;
}
```

10. **Write a program to determine the eligibility of a person to vote based on their age (age ≥ 18 is eligible).**

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int age=18;
    cout << "Enter the age: ";
    if (age >= 18) {
        cout << "You are eligible to vote." << endl;
    }
    else {
        cout << "You are not eligible to vote." << endl;
    }
    return 0;
```

```
}
```

11. Write a program to print numbers from 1 to 10 using a for loop.

Solution:-

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

12. Write a program to find the sum of the first n natural numbers using a for loop.

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int n;
    int sum = 0;
    cout << "Enter a positive integer: ";
    cin >> n;
    for (int i = 1; i <= n; i++) {
        sum += i;  // Add the current number to the sum
    }
    cout << "The sum of the first " << n << " natural numbers is: " << sum << endl;
    return 0;
}
```

13. Write a program to print the multiplication table of a number entered by the user using a for loop.

Solution:-

```
#include <iostream>
using namespace std;
int main() {
    int num;
    cout << "Enter a number: ";
    cin >> num;
    cout << "Multiplication table of " << num << " is:" << endl;
    for (int i = 1; i <= 10; i++) {
        cout << num << " x " << i << " = " << num * i << endl;
    }
    return 0;
```

```
}
```

14. Write a program to print the factorial of a number using a while loop.

Solution:-

```
#include <iostream>
using namespace std;
int main() {
   int num, fact = 1;
   cout << "Enter a number: ";
   cin >> num;
   int i = 1;
   while (i <= num) {
      fact =fact* i;
      i++;
   }
   cout << "Factorial of " << num << " is " << fact;
   return 0;
}
```

15. Write a program to reverse a given number using a while loop

```
#include <iostream>
using namespace std;
int main() {
   int num, reversed = 0;
   cout << "Enter a number: ";
   cin >> num;
   while (num > 0) {
      reversed =( reversed * 10) + num % 10;
      num = num/ 10;
   }
   cout << "Reversed number: " << reversed;
   return 0;
}
```

16. Write a program to check whether a number is prime or not using a for loop.

```
#include <iostream>
using namespace std;
int main() {
   int num, i;
   bool isPrime = true;
   cout << "Enter a number: ";
   cin >> num;
   if (num <= 1)
```

```
        isPrime = false;
    else {
        for (i = 2; i * i <= num; i++) {
            if (num % i == 0) {
                isPrime = false;
                break;
            }
        }
    }

    if (isPrime)
        cout << num << " is a prime number.";
    else
        cout << num << " is not a prime number.";
    return 0;
}
```

17. Write a program to calculate the sum of digits of a number using a while loop.

```
#include <iostream>

using namespace std;

    int main() {
        int num, sum = 0;
        cout << "Enter a number: ";
        cin >> num;
        while (num > 0) {
            sum += num % 10;

     num /= 10;

        }

        cout << "Sum of digits: " << sum;
        return 0;
}
```

18. Write a program to print the Fibonacci series up to n terms using a for loop.

```
    #include <iostream>
    using namespace std;
    int main() {
        int n, t1 = 0, t2 = 1, nextTerm;

  cout << "Enter the number of terms: ";

        cin >> n;
```

```
    for (int i = 1; i <= n; i++) {
        cout << t1 << " ";
        nextTerm = t1 + t2;
        t1 = t2;
        t2 = nextTerm;
    }
    return 0;
}
```

19. Write a program to display the sum of even numbers between 1 and 50 using a forloop.

```
#include <iostream>
using namespace std;
int main() {
    int sum = 0;
    for (int i = 2; i <= 50; i += 2)
        sum += i;
    cout << "Sum of even numbers between 1 and 50: " << sum;
    return 0;
}
```

20. Write a program to generate the following pattern using a nested for loop:

```
*
* *
* * *
* * * *
* * * * *
#include <iostream>
using namespace std;
int main() {
    int rows = 5;
    for (int i = 1; i <= rows; i++) {
        for (int j = 1; j <= i; j++)
            cout << "* ";
        cout << endl;
    }

     return 0;

}
```