PROGRAMMING FUNDAMENTALS LAB

ASSIGNMENT LAB 06

MASHHOOD RIAZ

24K-0530

Q1)

The choice of loop for user input depends upon the requirements of the program. When the number of inputs to be collected from user is known, **FOR** loop can be used and when you don't know how many inputs you need to collect but one-sided condition for input is given, use **WHILE** loop. **DO-WHILE** loop is similar to **WHILE** loop however the only difference is that it executes the loop body at least once before checking the input condition therefore it is used where you need to run the condition at least once.

FOR EXAMPLE.

L6Q1.c

File Edit View

```c
#include <stdio.h>

int main() {
    int input;
    int sum = 0;

    while (1) {
        printf("Enter a value (0 to stop): ");
        scanf("%d", &input);

        if (input == 0) {
            break;
        }

        sum += input;
        printf("Current sum: %d\n", sum);
    }

    printf("Final sum: %d\n", sum);

    return 0;
}
```

C:\Windows\System32\cmd.e

```
Microsoft Windows [Version 10.0.22631.4169]
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C:\Users\Hp\Documents\24k-0530 pflab6>gcc L6Q1.c -o L6Q1.exe

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q1.exe
Enter a value (0 to stop): 2
Current sum: 2
Enter a value (0 to stop): 3
Current sum: 5
Enter a value (0 to stop): 4
Current sum: 9
Enter a value (0 to stop): 6
Current sum: 15
Enter a value (0 to stop): 7
Current sum: 22
Enter a value (0 to stop): 8
Current sum: 30
Enter a value (0 to stop): 0
Final sum: 30

C:\Users\Hp\Documents\24k-0530 pflab6>
```
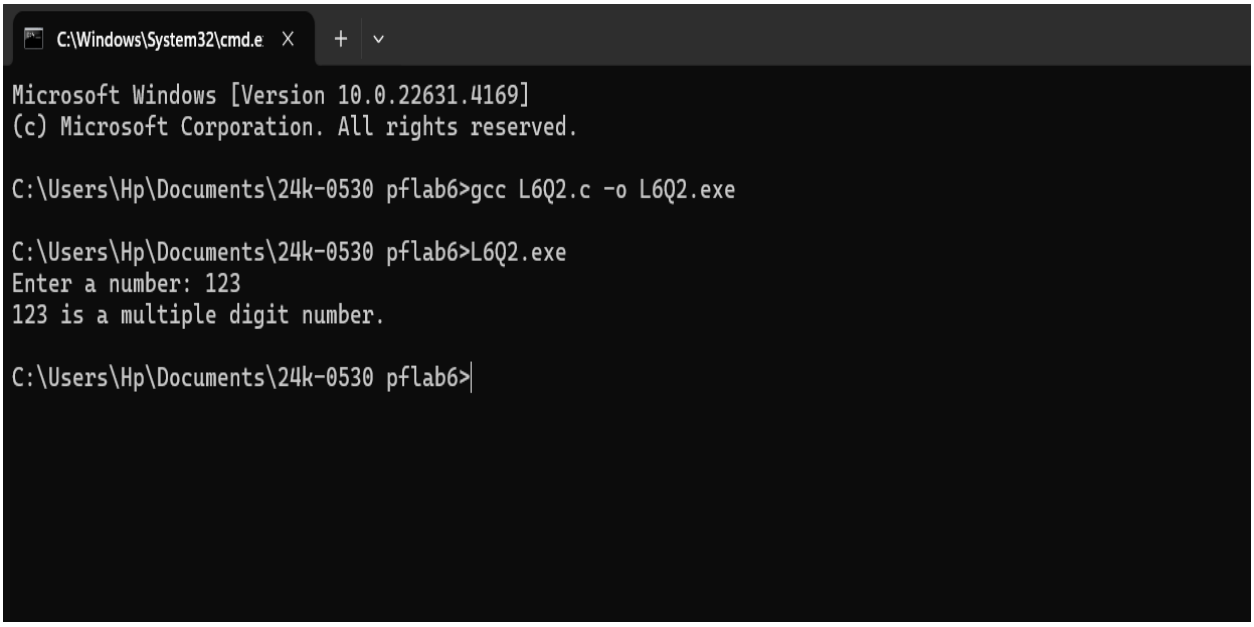

Q2)

L6Q1.c L6Q2.c

File Edit View

```c
#include <stdio.h>

int main() {
    int num,digitCount,temp = 0;

    printf("Enter a number: ");
    scanf("%d", &num);
    temp = num;

    while (temp != 0) {
        temp /= 10;
        digitCount++;
    }

    if (digitCount > 1) {
        printf("%d is a multiple digit number.\n", num);
    } else {
        printf("%d is a single digit number.\n", num);
    }

    return 0;
}
```



Q3)

L6Q1.c L6Q2.c L6Q3.c

File Edit View

```c
#include <stdio.h>

int main() {

    int num,digitCount,temp = 0;
    int Prime = 1;

    printf("Enter a number: ");
    scanf("%d", &num);
    temp = num;

    while (temp != 0) {
        temp /= 10;
        digitCount++;
    }

    if (digitCount > 1) {
        printf("%d is a multiple digit number.\n", num);
    } else {
        printf("%d is a single digit number.\n", num);
    }

    if (num <= 1) {
        Prime = 0;
    } else {
        for (int i = 2; i * i <= num; i++) {
            if (num % i == 0) {
                Prime = 0;
                break;
            }
        }
    }

    if (Prime) {
        printf("%d is a prime number.\n", num);
    } else {
        printf("%d is a composite number.\n", num);
    }

    return 0;
}
```

C:\Windows\System32\cmd.e

```
Microsoft Windows [Version 10.0.22631.4169]
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C:\Users\Hp\Documents\24k-0530 pflab6>gcc L6Q3.c -o L6Q3.exe

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q3.exe
Enter a number: 66
66 is a multiple digit number.
66 is a composite number.

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q3.exe
Enter a number: 123
123 is a multiple digit number.
123 is a composite number.

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q3.exe
Enter a number: 17
17 is a multiple digit number.
17 is a prime number.

C:\Users\Hp\Documents\24k-0530 pflab6>
```

Q4)

L6Q1.c | L6Q2.c | L6Q3.c | L6Q4.c

File Edit View

```c
//this is a generic code for as many terms as you want in this series...
#include <stdio.h>
int main() {

    int n = 0;
    int t1 = 1, t2 = 2;

    printf("Enter the number of terms: ");
    scanf("%d", &n);
    printf("%d, %d", t1, t2);

    for (int i = 3; i <= n; i++) {
        int nextTerm = t1 + t2;
        printf(", %d", nextTerm);
        t1 = t2;
        t2 = nextTerm;
    }

    return 0;
}
```

C:\Windows\System32\cmd.e

```
Microsoft Windows [Version 10.0.22631.4169]
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C:\Users\Hp\Documents\24k-0530 pflab6>gcc L6Q4.c -o L6Q4.exe

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q4.exe
Enter the number of terms: 6
1, 2, 3, 5, 8, 13
C:\Users\Hp\Documents\24k-0530 pflab6>
```

Q5)

L6Q1.c L6Q2.c L6Q3.c

File Edit View

```c
#include <stdio.h>
int main()
{
    int t1=65536;
    for(int i=2;i<=10;i++)
    {
        printf("%d ",t1);
        t1/=i;
    }

    return 0;
}
```

C:\Windows\System32\cmd.e

```
Microsoft Windows [Version 10.0.22631.4169]
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C:\Users\Hp\Documents\24k-0530 pflab6>gcc L6Q5.c -o L6Q5.exe

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q5.exe
65536 32768 10922 2730 546 91 13 1 0
C:\Users\Hp\Documents\24k-0530 pflab6>
```

Q6)

L6Q1.c | L6Q2.c | L6Q3.c | L6Q4.c | L6Q5.c | L6Q6.c

File Edit View

```c
#include <stdio.h>
int main()
{
    int t1=1,t2=2,temp;
    printf("%d %d ",t1,t2);

    for(int i=1;i<8;i++)
    {
        temp=t1*t2;
        printf("%d ",temp);
        t1=t2;
        t2=temp;
    }

    return 0;
}
```

C:\Windows\System32\cmd.e

```
Microsoft Windows [Version 10.0.22631.4169]
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C:\Users\Hp\Documents\24k-0530 pflab6>gcc L6Q6.c -o L6Q6.exe

C:\Users\Hp\Documents\24k-0530 pflab6>L6Q6.exe
1 2 2 4 8 32 256 8192 2097152
C:\Users\Hp\Documents\24k-0530 pflab6>
```