EEE110 - Computer Programming Laboratory
Control Structures

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Question 1

Design a program that displays the Fibonacci Series up to a certain number by using while statement.

(10 min, 13:20-13:30)

Question 1 - Solution - Part 1

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

int main()
{
    int value1=0, value2=1, nextValue, lastValue;

    cout<<"Enter a positive integer:"<<endl;
    cin>>lastValue;
    cout<<"Fibonacci Series: "<<value1<<", "<<value2<<", ";

    nextValue=value1+value2;
```

Question 1 - Solution - Part 2

```
    while(nextValue<=lastValue)
    {
        cout<<nextValue<<", ";

        value1=value2;
        value2=nextValue;
        nextValue=value1+value2;
    }

    return 0;
}
```

Question 2

Design a program that asks for a number and checks whether it is prime or not by using for statement.

(10 min, 13:30-13:40)

Question 2 - Solution - Part 1

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

int main()
{
    int number, counter=0;

    cout<<"Input a number to check prime or not: "<<endl;
    cin>>number;

    for (int i=1; i<=number; i++)
    {
        if (number%i==0)
            counter++;
    }
```

Question 2 - Solution - Part 2

```
    if (counter==2)
        cout << "The entered number is a prime number."<<
            endl;

    else
        cout << "The number you entered is not a prime
            number."<<endl;

    return 0;
}
```

Question 3

Devise a program that calculates basic math operations (+, -, *, and /) by using do-while and switch statements.

(10 min, 13:40-13:50)

Question 3 - Solution - Part 1

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

int main()
{
    double x, z, result;
    char operand;

    cout <<"Welcome␣to␣the␣mathematical␣selector␣program!"<<
        endl;
```

Question 3 - Solution - Part 2

```
    do
    {
        cout <<"Please␣enter␣the␣operand␣of␣the␣problem␣you␣
            would␣like␣to␣solve:"<<endl;
        cout <<"+␣for␣addition"<<endl;
        cout <<"-␣for␣subtraction"<<endl;
        cout <<"*␣for␣multiplication"<<endl;
        cout <<"/␣for␣division"<<endl;
        cout <<"Enter␣Q␣to␣quit"<<endl;
        cout <<"Enter␣your␣choice␣->␣";
        cin>> operand;

        switch (operand)
        {
            case 'Q':
                break;
```

Question 3 - Solution - Part 3

```
            case '+':
                cout <<"Please␣enter␣the␣two␣numbers␣->␣";
                cin >> x >> z;

                result = x+z;

                cout <<"The␣answer␣is:␣" << result <<endl;

                break;

            case '-':
                cout <<"Please␣enter␣the␣two␣numbers␣->␣";
                cin >> x >> z;

                result = x-z;

                cout <<"The␣answer␣is:␣" << result <<endl;

                break;
```

Question 3 - Solution - Part 4

```
            case '*':
                cout <<"Please␣enter␣the␣two␣numbers␣->␣";
                cin >> x >> z;

                result = x*z;

                cout <<"The␣answer␣is:␣" << result <<endl;

                break;

            case '/':
                cout <<"Please␣enter␣the␣two␣numbers␣->␣";
                cin >> x >> z;

                if (z ==0 )
                    cout <<"That␣is␣an␣invalid␣operation" <<
                        endl;
```

Question 3 - Solution - Part 5

```
                else
                {
                    result = x/z;

                    cout <<"The answer is: " << result <<
                        endl;
                }

                break;

            default :
                cout <<"That is an invalid operation" <<endl
                    ;

                break;
        }
```

Question 3 - Solution - Part 6

```
    }while (operand != 'Q');

    cout <<"End of Program!"<<endl;

    return 0;
}
```