Question 1

```
#include <iostream>
#include <math.h>
using namespace std;
int main()
{
   //Declare variables
   long double a,b,c, det;

   //Cout and receive input from the users (A B C)
   cout << "Quadratic Equation =  Ax^2 + Bx + C = 0" << endl;
   cout << "Input A, B, C, Respectively: ";
   cin >> a >> b >> c;

   //Calculate the Determinant
   det = ((b*b) - (4*a*c));

   cout << endl;

   if (det > 0)
   {
      cout << "x1: " << (-1*b + sqrt (det))/(2*a) << endl;
      cout << "x2: " << (-1*b - sqrt (det))/(2*a) << endl;
   }

   else if (det == 0)
   {
      cout << "x1: " << (-1*b /(2*a)) << endl;
      cout << "x2: " << (-1*b /(2*a)) << endl;
   }

   else if (det < 0)
   {
      cout << "x1: " << (-1*b /(2*a)) + (sqrt(abs(-det)))/(2*a) << "i" << endl;
      cout << "x2: " << (-1*b /(2*a)) - (sqrt(abs(-det)))/(2*a) << "i" << endl;
   }
   return 0;
}
```

Question 1

```cpp
#include <iostream>
#include <math.h>
using namespace std;
int main()
{
    //Declare variables
    long double a,b,c, det;

    //Cout and receive input from the users (A B C)
    cout << "Quadratic Equation =  Ax^2 + Bx + C = 0" << endl;
    cout << "Input A, B, C, Respectively: ";
    cin >> a >> b >> c;

    //Calculate the Determinant
    det = ((b*b) - (4*a*c));

    cout << endl;

    if (det > 0)
    {
        cout << "x1: " << (-1*b + sqrt (det))/(2*a) << endl;
        cout << "x2: " << (-1*b - sqrt (det))/(2*a) << endl;
    }

    else if (det == 0)
    {
        cout << "x1: " << (-1*b /(2*a)) << endl;
        cout << "x2: " << (-1*b /(2*a)) << endl;
    }

    else if (det < 0)
    {
        cout << "x1: " << (-1*b /(2*a)) + (sqrt(abs(-det)))/(2*a) << "i" << endl;
        cout << "x2: " << (-1*b /(2*a)) - (sqrt(abs(-det)))/(2*a) << "i" << endl;
    }

    return 0;
}

```

Input & Output

```
Quadratic Equation =  Ax^2 + Bx + C = 0
Input A, B, C, Respectively: 1 -5 6

x1: 3
x2: 2


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

```
Quadratic Equation =  Ax^2 + Bx + C = 0
Input A, B, C, Respectively: 1 5 6

x1: -2
x2: -3


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

```
Quadratic Equation =  Ax^2 + Bx + C = 0
Input A, B, C, Respectively: 2 3 10

x1: 1.35654i
x2: -2.85654i


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

Question 2

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

int main(){

   string birth_month;
   int birth_day;

   cout << "Enter your Birth Day: ";
   cin >> birth_day;
   cout << "Enter you Birth Month: ";
   cin >> birth_month;

   if (birth_month == "March" && birth_day >= 21 || birth_month == "April" && birth_day
<= 19) {
      cout << "Your Zodiac is Aries";
   }
   else if (birth_month == "April" && birth_day >= 20 || birth_month == "May" &&
birth_day <= 20) {
      cout << "Your Zodiac is Taurus";
   }
   else if (birth_month == "May" && birth_day >= 21 || birth_month == "June" &&
birth_day <= 20) {
      cout << "Your Zodiac is Gemini";
   }
   else if (birth_month == "June" && birth_day >= 21 || birth_month == "July" && birth_day
<= 22) {
      cout << "Your Zodiac is Cancer";
   }
   else if (birth_month == "July" && birth_day >= 23 || birth_month == "August" &&
birth_day <= 22) {
      cout << "Your Zodiac is Leo";
   }
   else if (birth_month == "August" && birth_day >= 23 || birth_month == "September" &&
birth_day <= 22) {
      cout << "Your Zodiac is Virgo";
   }
   else if (birth_month == "September" && birth_day >= 23 || birth_month == "October"
&& birth_day <= 22) {
      cout << "Your Zodiac is Libra";
```

```
    }
    else if (birth_month == "October" && birth_day >= 23 || birth_month == "November" &&
birth_day <= 21) {
        cout << "Your Zodiac is Scorpio";
    }
    else if (birth_month == "November" && birth_day >= 22 || birth_month == "December"
&& birth_day <= 21) {
        cout << "Your Zodiac is Sagittarius";
    }
    else if (birth_month == "December" && birth_day >= 22 || birth_month == "January" &&
birth_day <= 19) {
        cout << "Your Zodiac is Capricorn";
    }
    else if (birth_month == "January" && birth_day >= 20 || birth_month == "February" &&
birth_day <= 18) {
        cout << "Your Zodiac is Aquarius";
    }
    else if (birth_month == "February" && birth_day >= 19 || birth_month == "March" &&
birth_day <= 20) {
        cout << "Your Zodiac is Pisces";
    }
    else cout << "Input Doesn't Match, Please Try Again" << endl;


    return 0;
}
```

Question 2

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

int main(){

    string birth_month;
    int birth_day;

    cout << "Enter your Birth Day: ";
    cin >> birth_day;
    cout << "Enter you Birth Month: ";
    cin >> birth_month;

    if (birth_month == "March" && birth_day >= 21 || birth_month == "April" && birth_day <= 19) {
        cout << "Your Zodiac is Aries";
    }
    else if (birth_month == "April" && birth_day >= 20 || birth_month == "May" && birth_day <= 20) {
        cout << "Your Zodiac is Taurus";
    }
    else if (birth_month == "May" && birth_day >= 21 || birth_month == "June" && birth_day <= 20) {
        cout << "Your Zodiac is Gemini";
    }
    else if (birth_month == "June" && birth_day >= 21 || birth_month == "July" && birth_day <= 22) {
        cout << "Your Zodiac is Cancer";
    }
    else if (birth_month == "July" && birth_day >= 23 || birth_month == "August" && birth_day <= 22) {
        cout << "Your Zodiac is Leo";
    }
    else if (birth_month == "August" && birth_day >= 23 || birth_month == "September" && birth_day <= 22) {
        cout << "Your Zodiac is Virgo";
    }
    else if (birth_month == "September" && birth_day >= 23 || birth_month == "October" && birth_day <= 22) {
        cout << "Your Zodiac is Libra";
    }
    else if (birth_month == "October" && birth_day >= 23 || birth_month == "November" && birth_day <= 21) {
        cout << "Your Zodiac is Scorpio";
    }
    else if (birth_month == "November" && birth_day >= 22 || birth_month == "December" && birth_day <= 21) {
        cout << "Your Zodiac is Sagittarius";
    }
    else if (birth_month == "December" && birth_day >= 22 || birth_month == "January" && birth_day <= 19) {
        cout << "Your Zodiac is Capricorn";
    }
    else if (birth_month == "January" && birth_day >= 20 || birth_month == "February" && birth_day <= 18) {
        cout << "Your Zodiac is Aquarius";
    }
    else if (birth_month == "February" && birth_day >= 19 || birth_month == "March" && birth_day <= 20) {
        cout << "Your Zodiac is Pisces";
    }
    else cout << "Input Doesn't Match, Please Try Again" << endl;


    return 0;
}

```

Input & Output

```
Enter your Birth Day: 7
Enter you Birth Month: May
Your Zodiac is Taurus

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

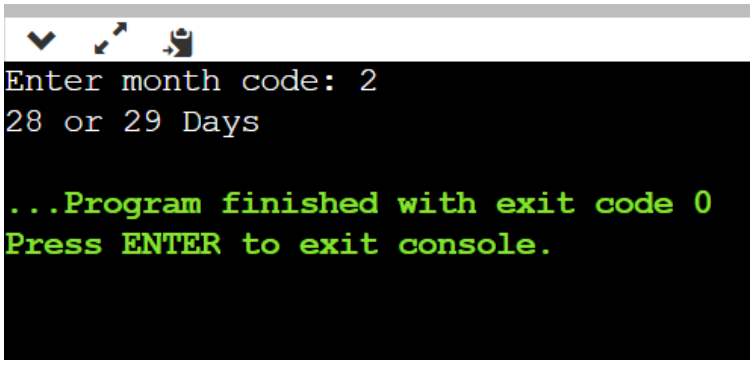
```
Enter your Birth Day: 15
Enter you Birth Month: November
Your Zodiac is Scorpio

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

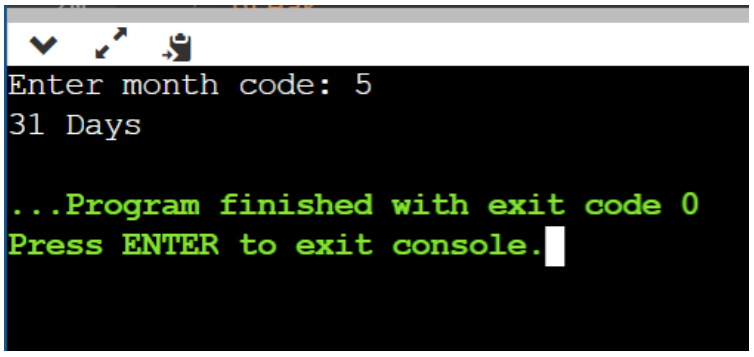
```
Enter your Birth Day: 21
Enter you Birth Month: January
Your Zodiac is Aquarius

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

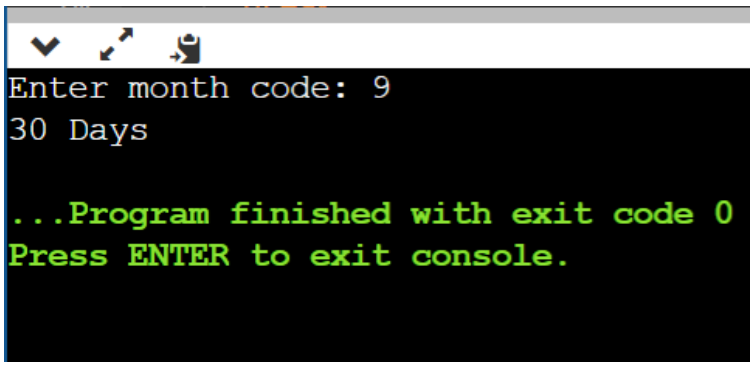
Question 3

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

int main() {

//Declare the variables
  int month_code;

//Output message and receive inputs from the user
  cout << "Enter month code: ";
  cin >> month_code;

//Use switch conditional structure to decide the number of days base on the month
  switch (month_code) {
    case 1 :
      cout << "31 Days";
      break;
    case 2 :
      cout << "28 or 29 Days";
      break;
    case 3 :
      cout << "31 Days";
      break;
    case 4 :
      cout << "30 Days";
      break;
    case 5 :
      cout << "31 Days";
      break;
    case 6 :
      cout << "30 Days";
      break;
    case 7 :
      cout << "31 Days";
      break;
    case 8 :
      cout << "31 Days";
      break;
    case 9 :
      cout << "30 Days";
      break;
    case 10 :
```

Input & Output







```
    cout << "31 Days";
    break;
  case 11 :
    cout << "30 Days";
    break;
  case 12 :
    cout << "31 Days";
    break;
  default:
    cout << "Please input between 1 - 12";
    break;
}

 return 0;
}
```

Question 3

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

int main() {

//Declare the variables
  int month_code;

//Output message and receive inputs from the user
  cout << "Enter month code: ";
  cin >> month_code;

//Use switch conditional structure to decide the number of days base on the month
  switch (month_code) {
    case 1 :
      cout << "31 Days";
      break;
    case 2 :
      cout << "28 or 29 Days";
      break;
    case 3 :
      cout << "31 Days";
      break;
    case 4 :
      cout << "30 Days";
      break;
    case 5 :
      cout << "31 Days";
      break;
    case 6 :
      cout << "30 Days";
      break;
    case 7 :
      cout << "31 Days";
      break;
    case 8 :
      cout << "31 Days";
      break;
    case 9 :
      cout << "30 Days";
      break;
    case 10 :
      cout << "31 Days";
      break;
    case 11 :
      cout << "30 Days";
      break;
    case 12 :
      cout << "31 Days";
      break;
    default:
      cout << "Please input between 1 - 12";
      break;
  }

  return 0;
}

```

Question 4

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

int main() {

   double num1;
   int num2;

   cout << "Enter your number: ";
   cin >> num1;

   num2 = num1;

   if (num2 == num1){
      cout << num1 << " Is a Integer Number.";
   }
   else {
      cout << num1 << " Is Not An Interger Number.";
   }

   return 0;
}
```

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

int main() {

    double num1;
    int num2;

    cout << "Enter your number: ";
    cin >> num1;

    num2 = num1;

    if (num2 == num1){
        cout << num1 << " Is a Integer Number.";
    }
    else {
        cout << num1 << " Is Not An Interger Number.";
    }

    return 0;
}
```

Input & Output