

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

```

1  #include <iostream>
2  #include <math.h>
3  using namespace std;
4  int main()
5  {
6      //Declare variables
7      long double a,b,c, det;
8
9      //Cout and receive input from the users (A B C)
10     cout << "Quadratic Equation = Ax^2 + Bx + C = 0" << endl;
11     cout << "Input A, B, C, Respectively: ";
12     cin >> a >> b >> c;
13
14     //Calculate the Determinant
15     det = ((b*b) - (4*a*c));
16
17     cout << endl;
18
19     if (det > 0)
20     {
21         cout << "x1: " << (-1*b + sqrt (det))/(2*a) << endl;
22         cout << "x2: " << (-1*b - sqrt (det))/(2*a) << endl;
23     }
24
25     else if (det == 0)
26     {
27         cout << "x1: " << (-1*b /(2*a)) << endl;
28         cout << "x2: " << (-1*b /(2*a)) << endl;
29     }
30
31     else if (det < 0)
32     {
33         cout << "x1: " << (-1*b /(2*a)) + (sqrt(abs(-det)))/(2*a) << "i" << endl;
34         cout << "x2: " << (-1*b /(2*a)) - (sqrt(abs(-det)))/(2*a) << "i" << endl;
35     }
36
37     return 0;
38 }
39

```

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";
    }
}
```

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```
}  
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

```

1  #include <iostream>
2  #include <cmath>
3  using namespace std;
4
5  int main(){
6
7      string birth_month;
8      int birth_day;
9
10     cout << "Enter your Birth Day: ";
11     cin >> birth_day;
12     cout << "Enter you Birth Month: ";
13     cin >> birth_month;
14
15     if (birth_month == "March" && birth_day >= 21 || birth_month == "April" && birth_day <= 19) {
16         cout << "Your Zodiac is Aries";
17     }
18     else if (birth_month == "April" && birth_day >= 20 || birth_month == "May" && birth_day <= 20) {
19         cout << "Your Zodiac is Taurus";
20     }
21     else if (birth_month == "May" && birth_day >= 21 || birth_month == "June" && birth_day <= 20) {
22         cout << "Your Zodiac is Gemini";
23     }
24     else if (birth_month == "June" && birth_day >= 21 || birth_month == "July" && birth_day <= 22) {
25         cout << "Your Zodiac is Cancer";
26     }
27     else if (birth_month == "July" && birth_day >= 23 || birth_month == "August" && birth_day <= 22) {
28         cout << "Your Zodiac is Leo";
29     }
30     else if (birth_month == "August" && birth_day >= 23 || birth_month == "September" && birth_day <= 22) {
31         cout << "Your Zodiac is Virgo";
32     }
33     else if (birth_month == "September" && birth_day >= 23 || birth_month == "October" && birth_day <= 22) {
34         cout << "Your Zodiac is Libra";
35     }
36     else if (birth_month == "October" && birth_day >= 23 || birth_month == "November" && birth_day <= 21) {
37         cout << "Your Zodiac is Scorpio";
38     }
39     else if (birth_month == "November" && birth_day >= 22 || birth_month == "December" && birth_day <= 21) {
40         cout << "Your Zodiac is Sagittarius";
41     }
42     else if (birth_month == "December" && birth_day >= 22 || birth_month == "January" && birth_day <= 19) {
43         cout << "Your Zodiac is Capricorn";
44     }
45     else if (birth_month == "January" && birth_day >= 20 || birth_month == "February" && birth_day <= 18) {
46         cout << "Your Zodiac is Aquarius";
47     }
48     else if (birth_month == "February" && birth_day >= 19 || birth_month == "March" && birth_day <= 20) {
49         cout << "Your Zodiac is Pisces";
50     }
51     else cout << "Input Doesn't Match, Please Try Again" << endl;
52
53     return 0;
54 }
55
56

```

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;

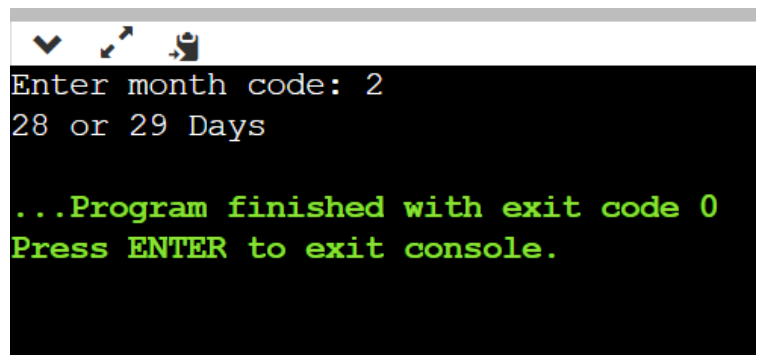
int main() {

//Declare the variables
int month_code;

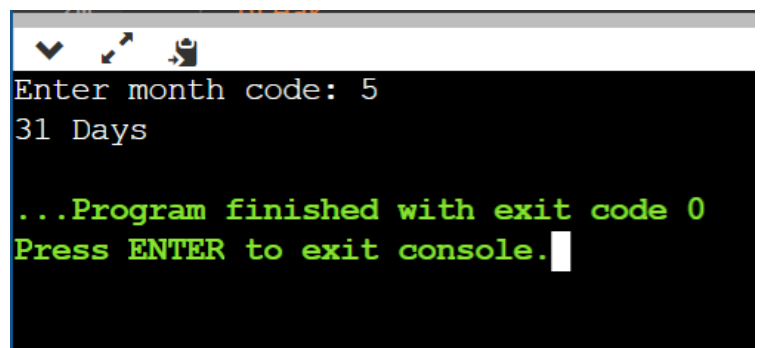
//Output message and receive inputs from the user
cout << "Enter month code: ";
cin >> month_code;

//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 :
```

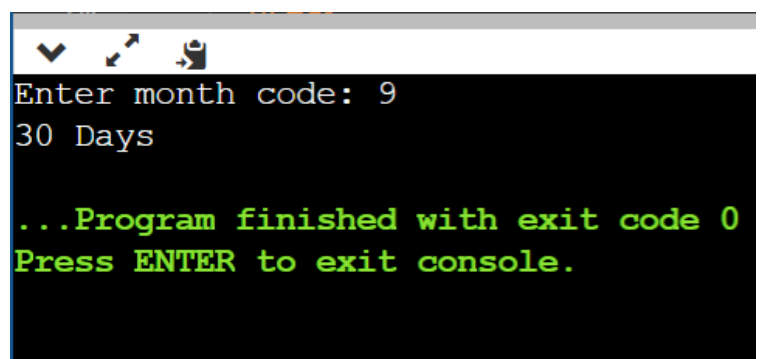
Input & Output



Enter month code: 2
28 or 29 Days
...Program finished with exit code 0
Press ENTER to exit console.



Enter month code: 5
31 Days
...Program finished with exit code 0
Press ENTER to exit console.



Enter month code: 9
30 Days
...Program finished with exit code 0
Press ENTER to exit console.

```
    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

```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5
6      //Declare the variables
7      int month_code;
8
9      //Output message and receive inputs from the user
10     cout << "Enter month code: ";
11     cin >> month_code;
12
13     //Use switch conditional structure to decide the number of days base on the month
14     switch (month_code) {
15         case 1 :
16             cout << "31 Days";
17             break;
18         case 2 :
19             cout << "28 or 29 Days";
20             break;
21         case 3 :
22             cout << "31 Days";
23             break;
24         case 4 :
25             cout << "30 Days";
26             break;
27         case 5 :
28             cout << "31 Days";
29             break;
30         case 6 :
31             cout << "30 Days";
32             break;
33         case 7 :
34             cout << "31 Days";
35             break;
36         case 8 :
37             cout << "31 Days";
38             break;
39         case 9 :
40             cout << "30 Days";
41             break;
42         case 10 :
43             cout << "31 Days";
44             break;
45         case 11 :
46             cout << "30 Days";
47             break;
48         case 12 :
49             cout << "31 Days";
50             break;
51         default:
52             cout << "Please input between 1 - 12";
53             break;
54     }
55
56     return 0;
57 }
58
```

Question 4

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

int main() {

    double num1;
    int num2;

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

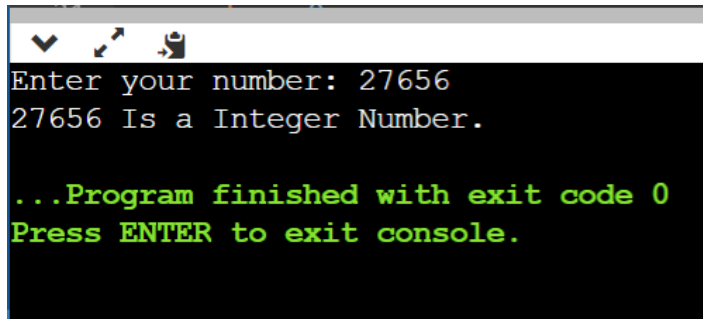
    num2 = num1;

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

    return 0;
}
```

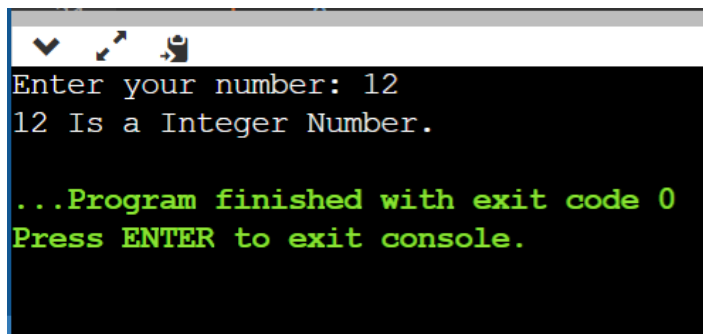
```
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5
6      double num1;
7      int num2;
8
9      cout << "Enter your number: ";
10     cin >> num1;
11
12     num2 = num1;
13
14     if (num2 == num1){
15         cout << num1 << " Is a Integer Number.";
16     }
17     else {
18         cout << num1 << " Is Not An Interger Number.";
19     }
20
21     return 0;
22 }
23
```


Input & Output



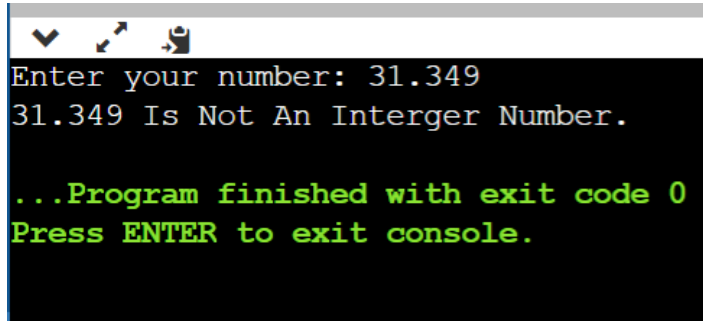
```
Enter your number: 27656
27656 Is a Integer Number.

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



```
Enter your number: 12
12 Is a Integer Number.

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



```
Enter your number: 31.349
31.349 Is Not An Interger Number.

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