



Fundamentals of Programming

ME-15

Section B

1st Semester

Date of Submission: 11/10/2023

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Home Task:

1. Create a program that takes a student's score as input and assigns a grade based on predefined criteria using logical operators (e.g., A, B, C, D, F).
A-Grade: 90-100 Marks
B-Grade: 75-90 Marks
C-Grade: 60-75 Marks
D-Grade: 45-60 Marks
F-Grade: 0-45 Marks
2. Write a program that takes an integer as input and determines if it is both even and divisible by 5.
3. Create a C++ program that checks if a user-provided year is a leap year.
4. Create a C++ program that determines if a student is eligible for a scholarship based on their GPA (must have GPA ≥ 3.5) and attendance (must have attended at least 80% of classes).
5. Write a program that checks if a given character is a vowel (a, e, i, o, u) or a consonant using logical operators.

TASK 1

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

```
int main() {
int number;
cout<<"Enter score:"<<endl;
cin>>number;
```

```
if (number>=90 && number<=100){
cout<<"A";} //using '&&' because both the statements are true
```

```
else if (number<90 && number>=75){
cout<<"B";} //using else if because if the previous statement is wrong it'll move on to the
next one
```

```
else if (number<75 && number>=60){
cout<<"C";}
```

```
else if (number<60 && number>=45){
cout<<"D";}
```

```
else {
cout<<"F";} //in the end when none of the statements are true, the grade is 'F'
```

```
return 0;}
```

OUTPUT:

```
D:\Downloads\lab task 2.exe
Enter score:
24
F
-----
Process exited after 2.659 seconds with return value 0
Press any key to continue . . .
```

```
D:\Downloads\lab task 2.exe
Enter score:
45
D
-----
Process exited after 9.008 seconds with return value 0
Press any key to continue . . .
```

```
D:\Downloads\lab task 2.exe
Enter score:
76
B
-----
Process exited after 5.31 seconds with return value 0
Press any key to continue . . .
```

```
D:\Downloads\lab task 2.exe
Enter score:
65
C
-----
Process exited after 6.523 seconds with return value 0
Press any key to continue . . .
```

```
D:\Downloads\lab task 2.exe
Enter score:
94
A
-----
Process exited after 7.651 seconds with return value 0
Press any key to continue . . .
```

TASK 2

```
int main(){
    int num1, num2 = 5, num3 = 2;
    cout<<"Enter a number"<<endl;
    cin>>num1;

    if (num1 % num2 == 0 && num1 % num3 == 0){
        cout<<"Number is even and divisible by five"<<endl;} /* used % because
for a number to be divisible by another number it has to have a remainder of zero and
% tells the remainder after the division of two numbers */
```

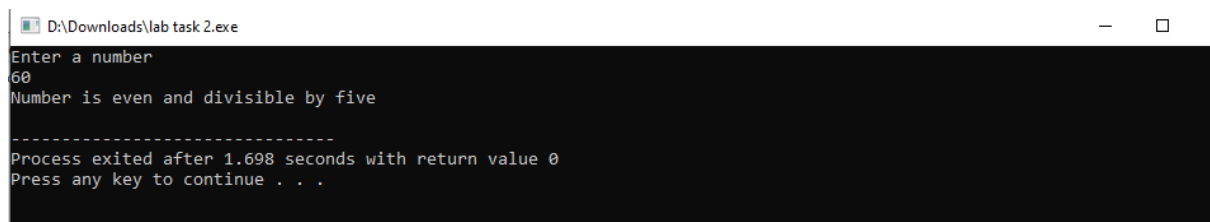
```

        else if (num1 % num2 != 0 && num1 % num3 == 0){
            cout<<"Number is even but NOT divisible by five"<<endl;} /* the '!=' tells
us that the remainder is not equal to zero when the user inputs a number */
        else if (num1 % num2 == 0 && num1 % num3 != 0){
            cout<<"Number is NOT even but is divisible by five"<<endl;}
        else {
            cout<<"Number is not even nor divisible by five"<<endl;}

return 0;
}

```

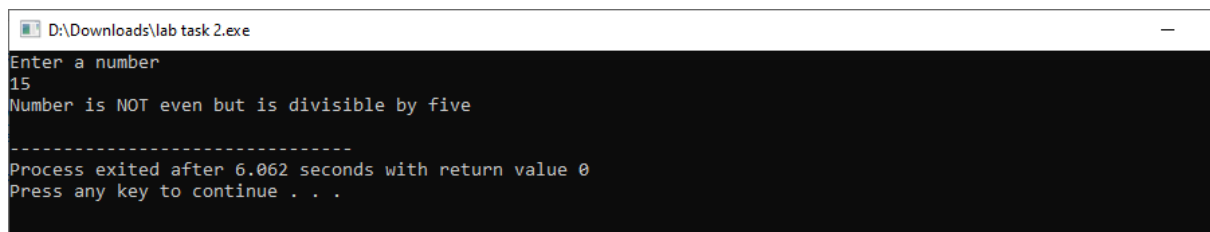
OUTPUT:



```

D:\Downloads\lab task 2.exe
Enter a number
60
Number is even and divisible by five
-----
Process exited after 1.698 seconds with return value 0
Press any key to continue . . .

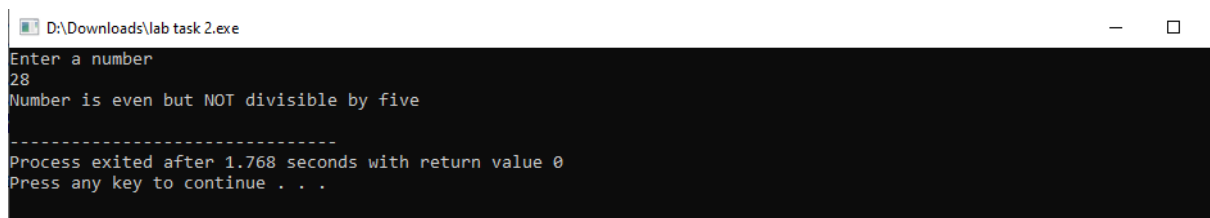
```



```

D:\Downloads\lab task 2.exe
Enter a number
15
Number is NOT even but is divisible by five
-----
Process exited after 6.062 seconds with return value 0
Press any key to continue . . .

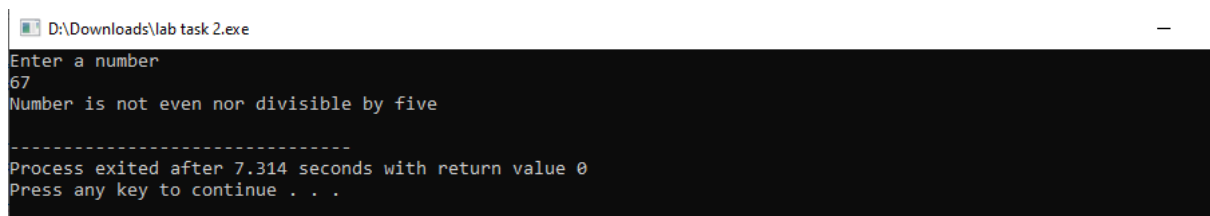
```



```

D:\Downloads\lab task 2.exe
Enter a number
28
Number is even but NOT divisible by five
-----
Process exited after 1.768 seconds with return value 0
Press any key to continue . . .

```



```

D:\Downloads\lab task 2.exe
Enter a number
67
Number is not even nor divisible by five
-----
Process exited after 7.314 seconds with return value 0
Press any key to continue . . .

```

TASK 3

```

int main( ){
int year, number = 4;

```

```

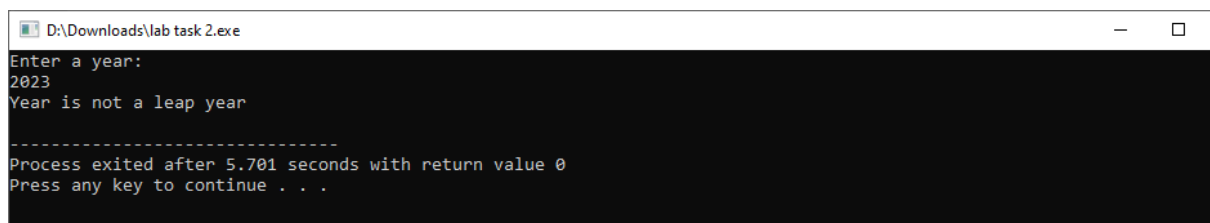
cout<<"Enter a year:"<<endl;
cin>>year;

if ( year % number == 0 ){
    cout<<"Year is a leap year:"<<endl;} /* leap years are divisible by 4 so the number
has to have a remainder of zero when divided by 4 */
else {
    cout<<"Year is not a leap year"<<endl;}

return 0;
}

```

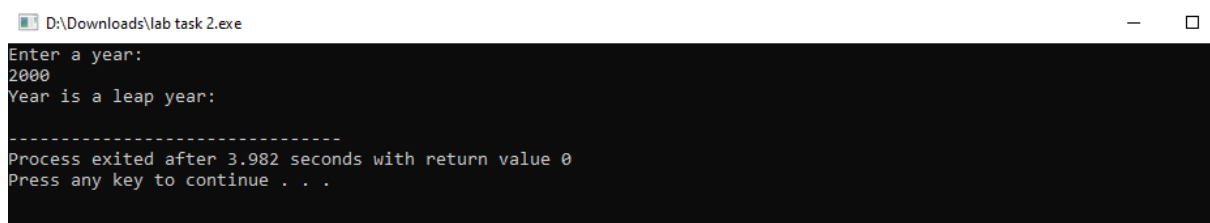
OUTPUT:



```

D:\Downloads\lab task 2.exe
Enter a year:
2023
Year is not a leap year
-----
Process exited after 5.701 seconds with return value 0
Press any key to continue . . .

```



```

D:\Downloads\lab task 2.exe
Enter a year:
2000
Year is a leap year:
-----
Process exited after 3.982 seconds with return value 0
Press any key to continue . . .

```

TASK 4

```

int main(){
float GPA, attendance;
cout<<"Grade Point Average:"<<endl;
cin>>GPA;

cout<<"Student Attendance Percentage:"<<endl;
cin>>attendance;

if (GPA >= 3.5 && attendance >= 80){
    cout<<"Eligible for scholarship"<<endl;} /* both GPA and attendance are required in
order to print "Eligible for scholarship" or "Not eligible for scholarship" so that's why
&& was used */
else {
    cout<<"Not eligible for scholarship"<<endl;}
}

```

```
return 0;
}
```

OUTPUT:

```
D:\Downloads\lab task 2.exe
Grade Point Average:
2.0
Student Attendance Percentage:
70
Not eligible for scholarship

-----
Process exited after 3.933 seconds with return value 0
Press any key to continue . . .
```

```
D:\Downloads\lab task 2.exe
Grade Point Average:
3.5
Student Attendance Percentage:
80
Eligible for scholarship

-----
Process exited after 4.53 seconds with return value 0
Press any key to continue . . .
```

TASK 5

```
int main(){
char letter;
cout<<"Enter letter:"<<endl;
cin>>letter;

if (letter == 'a' || letter == 'i' || letter == 'e' || letter == 'u' || letter == 'o'){
cout<<"Letter is a vowel"<<endl;} /* used || to show that 'a' OR 'i' OR etc. can be the
letters the user inputs and they are vowels */

else {
cout<<"Letter is a consonant"<<endl;} //any letter besides the vowels is a consonant

return 0;
}
```

OUTPUT:

D:\Downloads\lab task 2.exe

Enter letter:

c

Letter is a consonant

Process exited after 3.544 seconds with return value 0

Press any key to continue . . .

D:\Downloads\lab task 2.exe

Enter letter:

a

Letter is a vowel

Process exited after 2.051 seconds with return value 0

Press any key to continue . . .