National University of Computer and Emerging Sciences Islamabad

Programming Fundamentals Lab FALL 2019

Lab Manual 07
Control Structures-III (Switch case, Ternary operator)

Lab Tasks

Problem 01
Write a program to take two integers as input from the user and find out whether the numbers entered are even or odd. Also check whether the first number is completely divisible by second number or not.
Note: Use ternary operator

Problem 02
Write a program to take an integer between 1 and 99999 as input from the user and display the number of digits entered by user.
Example:
if user enters 10, the program should display "You have Entered a 2 Digit Number"
if the user enters 978, the program should display "You have Entered a 3 Digit Number"
and so on.
if the user enters any other number, display "Invalid Input" .
Note: Use ternary operator and Switch Case Statement.

Problem 03
The formula for computing the final amount if one is earning compound interest is given on Wikipedia as:

$$A = A_0\left(1 + \frac{r}{n}\right)^{nt}$$

Where
A0 = Principal Amount (Initial Investment)
r = annual nominal interest rate (as a decimal)
n = number of times interest compounded per year
t = number of years
Write a program that assigns the principal amount of 10000 to variable A0, assign to n the value 12, and assign to r the interest rate of 8% (0.08). Then have the program prompt the user for the number of years, t, that the money will be compounded for. Calculate and print the final amount after t years.

Problem 04

You have to write a program to aid in the selection of a cricket team. Your program will take the following information as input:

- Batting average (greater than or equal to 0)
- Bowling average (greater than or equal to 0)
- Type of Bowler ('f' for fast bowler and 's' for spinner)
- Batting strike rate (greater than 0)
- Economy rate (greater than or equal to 0)

Based on this information, you have to decide three things:

- Is he a **batsman?**
  If yes, then should he be playing in **Tests or in ODIs?**
- If not a batsman, is he a **bowler?**
  If yes, then should he be playing in **Tests or in ODIs?**
- If he is **AllRounder**, then should he be playing in Tests or in ODIs?

If the stats of a player are such that he cannot be put into any of the above three categories, then your program should state that the player should be part of the Reserves.

A player should be categorized as a **Batsman**

If his batting average is greater than or equal to 45 AND his bowling average is greater than or equal to 60.

A player should be categorized as a **Bowler (regardless of his type)**

If his bowling average is less than or equal to 30 AND his batting average is less than 20.

A player should be categorized as an **All-rounder**

If his batting average is greater than or equal to 40 AND his bowling average is less than or equal to 30.

Now, a **Batsman** should play in a Test side,

If his batting average is greater than or equal to 50 AND his strike rate is less than or equal to 70. If this is not the case then he should play in ODIs.

In case of a **Bowler,**

If he is a spinner AND his average is between 20 and 30 (both inclusive) AND his economy rate is less than or equal to 3 then he should play in a Test side – otherwise in ODIs.

If he is a fast bowler AND his average is between 20 and 30 (both inclusive) AND his economy rate is less than or equal to 5 but greater than 3 then he should play in ODIs – otherwise in Tests.

For an **All-rounder**

If the batting average is greater than or equal to 40 AND the bowling average is less than or equal to 25 then he should be playing in Tests – otherwise in ODIs.

Problem 05

Andrew's Department Store is having a BIG sale on everything in the store. Customers will receive additional discounts on their total purchase depending upon how much they buy. Write a program that asks for the total purchase amount then calculates the discount and new amount, then prints out all 3 values as shown below.
The discounts are to be as follows.

Total Purchase	Discount
Less than $100	10%
$100 to $249.99	20%
$250 to $499.99	30%
$500 to $999.99	40%
$1000 or more	50%

Output should look as follows:

```
Total Purchase    $ 1234.00
Discount          $  617.00
--------------------------
New Price         $  617.00
```

Note: Use ternary operator to solve the problem.

Problem 06

Following is the old rhyme:

Thirty days hath September, April, June and November.
All the rest have 31, save February alone,
Which has 28 and, in leap year, 29.

Write a program that takes input for day ,month and year from user.For month and day user will enter an integer i.e. 1 for January and 2 for February and for day 1 for Monday 2 for Tuesday and for year user will enter another integer value.Your program should output the number of Days in the entered month along with the Day..First you need to check whether the entered year is a leap year or not.Leap Year repeats itself after 4 years so if the entered year is divisible by 4 than it is a Leap year.In leap Year February has 29 Days and for the rest of the years February has 28 days.Use switch statement to write the code.

Example:

User input year : 2018
User input month: 4
User input Day : 3
OUTPUT : The Number of days in April, 2018 are 30 and The Day is Wednesday
User input year : 2012
User input month: 2
User input Day : 2
OUTPUT : The Number of days in February, 2012 are 29 and The Day is Tuesday

Submission Instructions:

1. Save all **.cpp** files with your roll no and task number
   e.g. i19XXXX_Task06.cpp
2. Now create a new folder with name *ROLLNO_LAB06* **e.g. i19XXXX_LAB06**
3. Move all of your .cpp files to this newly created directory and compress it into **.zip file**.
4. Now you have to submit this zipped file on Slate.

THE END