Assignment

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Subject: Programming Fundamentals
Section: BS(AI)1A

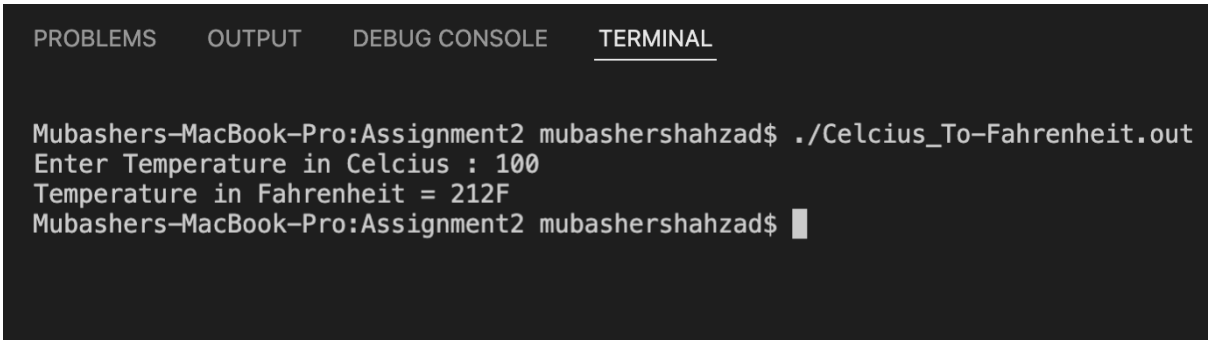
Problem 1:

Write a program to enter temperature in Celsius and convert it into Fahrenheit and vice versa.

Celsius To Fahrenheit Code:

```
#include<stdio.h>
int main(){
    // Declaring two variables as celcius and fahrenheit
    int celcius, fahrenheit;
    printf("Enter Temperature in Celcius : ");
    scanf("%d", &celcius);
    // Formula to convert celcius to fahrenheit
    fahrenheit = (celcius * 9/5) + 32;
    printf("Temperature in Fahrenheit = %dF\n", fahrenheit);

    return 0;
}
```

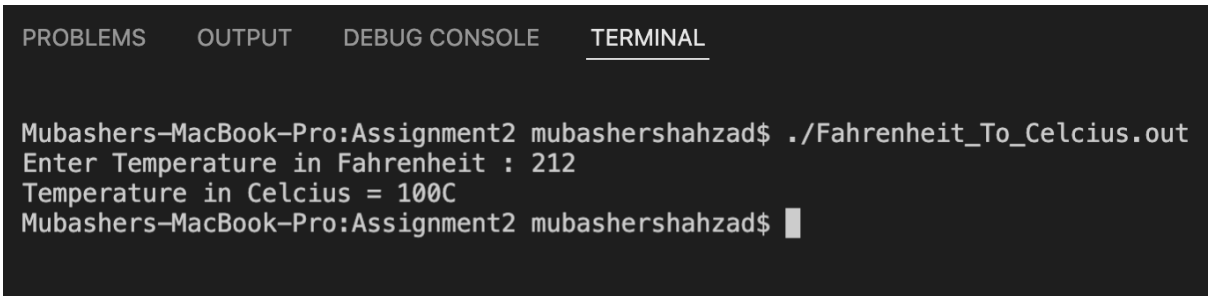
Output:



Fahrenheit To Celcius Code:

```
#include<stdio.h>
int main(){
    int celcius, fahrenheit;
    printf("Enter Temperature in Fahrenheit : ");
    scanf("%d", &fahrenheit);
    // formula to convert fahrenheit to celcius
    celcius = (fahrenheit - 32) * 5/9;
    printf("Temperature in Celcius = %dC\n", celcius);

    return 0;
}
```

Output:



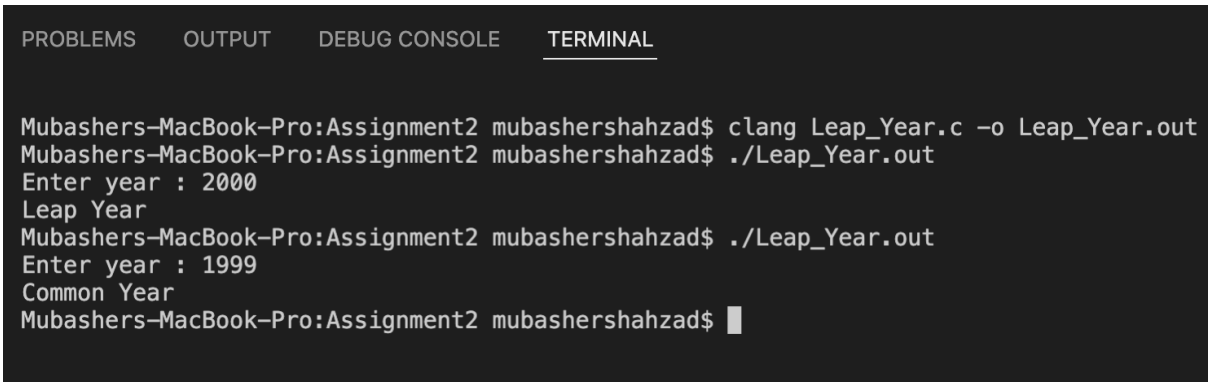
Problem 2:

Check whether a year is leap year or not?
Write a C program that ask user to input year, determines whether the year is a leap year. A year is a leap year if it is divisible by 4, but is not divisible by 100 except when divisible by 400. (The year 2000 was a leap year.)

Code:

```c
#include <stdio.h>

int main()
{
    int year;

    // Input year from user
    printf("Enter year : ");
    scanf("%d", &year);

    /*
     * If year is exactly divisible by 4  and year is not divisible by 100
     * or year is exactly divisible by 400 then the year is leap year.
     * Else year is normal year
     */
    if (((year % 4 == 0) && (year % 100 != 0)) || (year % 400 == 0))
    {
        printf("Leap Year\n");
    }
    else
    {
        printf("Common Year\n");
    }

    return 0;
}
```

Output:



Problem 3:

Write a program that prompts the user to enter the total number of cookies, the number of cookies in a box, and the number of cookie boxes in a container. The program then outputs the number of Boxes and the number of containers to ship the cookies. Note that each box must contain the specified number of cookies, and each container must contain the specified number of boxes.

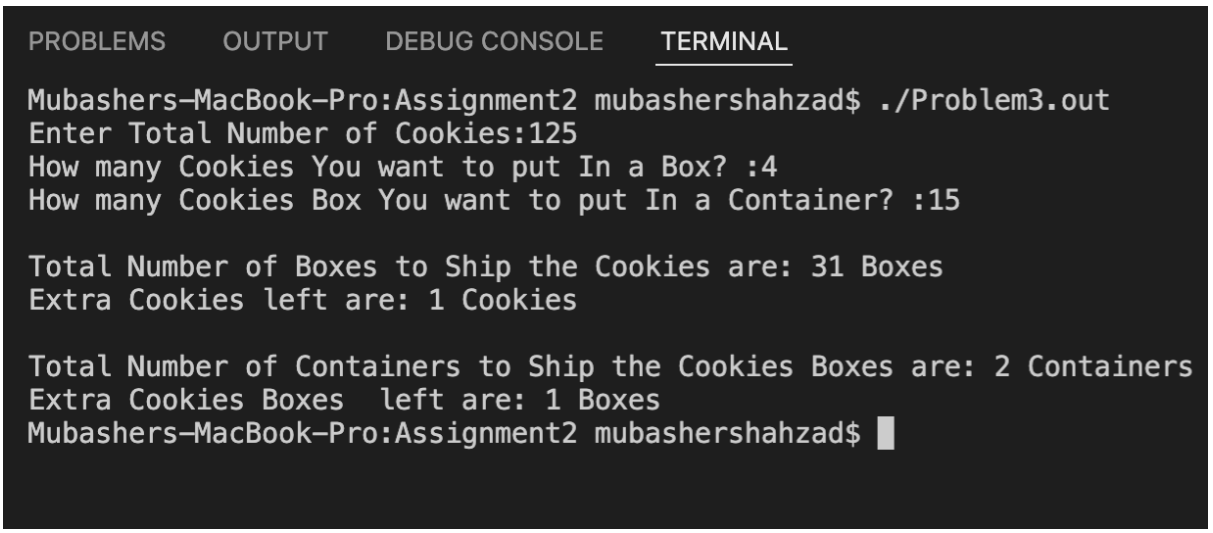
If the last box of cookies contains less than the number of specified cookies, you can discard it and output the number of leftover cookies. Similarly, if the last container contains less than the number of specified boxes, you can discard it and output the number of leftover boxes.

Code:

```
#include <stdio.h>
#include <math.h>
int main()
{
   int Cookies, C_Box, C_Container, Extra_Cookies, Extra_boxes;
   int Total_Containers, Total_Boxes;

   printf("Enter Total Number of Cookies:");
   scanf("%d", &Cookies);
   printf("How many Cookies You want to put In a Box? :");
   scanf("%d", &C_Box);
   printf("How many Cookies Box You want to put In a Container? :");
   scanf("%d", &C_Container);

   Total_Boxes = Cookies / C_Box;
   Extra_Cookies = Cookies % C_Box;
   printf("\nTotal Number of Boxes to Ship the Cookies are: %d Boxes\n", Total_Boxes);
   if (Extra_Cookies != 0)
   {
      printf("Extra Cookies left are: %d Cookies\n\n", Extra_Cookies);
   }

   Total_Containers = Total_Boxes / C_Container;
```

```
    Extra_boxes = Total_Boxes % C_Container;
    printf("Total Number of Containers to Ship the Cookies Boxes are: %d Containers\n",
Total_Containers);
    if (Extra_boxes != 0)
    {
        printf("Extra Cookies Boxes  left are: %d Boxes\n", Extra_boxes);
    }

    return 0;
}
```

Output:



Problem 4:

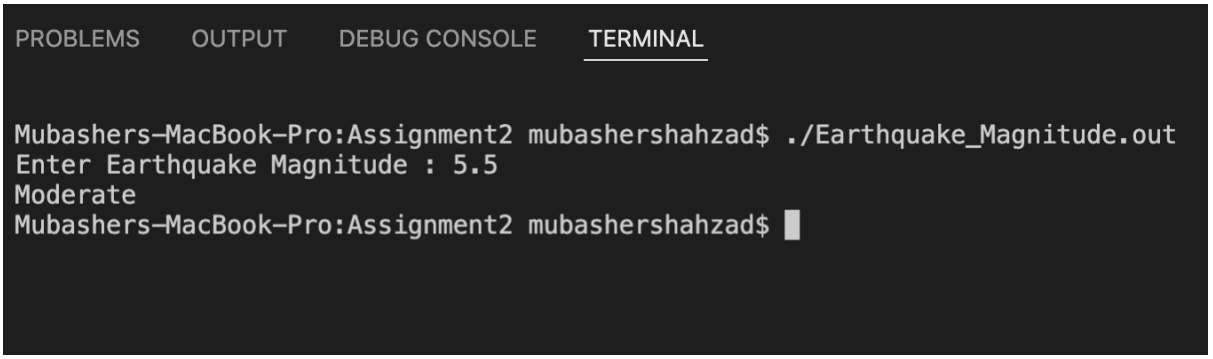
Write a program that reads a magnitude from the user and displays the appropriate descriptor as part of a meaningful message. For example, if the user enters 5.5 then your program should indicate that a magnitude 5.5 an earthquake is considered to be a moderate earthquake.

Code:

```
#include <stdio.h>
int main()
{
    // Declaring variable as float datatype named magnitude
    float magnitude;
    printf("Enter Earthquake Magnitude : ");
    scanf("%f", &magnitude);
    // conditions to check if magnitude is greater than input value then which descriptor lies
    if (magnitude > 0 && magnitude <= 2.0)
    {
        printf("Descriptor : Micro\n");
```

```
    }
    else if (magnitude > 2.0 && magnitude <= 3.0)
    {
        printf("Very Minor\n");
    }
    else if (magnitude > 3.0 && magnitude <= 4.0)
    {
        printf("Minor\n");
    }
    else if (magnitude > 4.0 && magnitude <= 5.0)
    {
        printf("Light\n");
    }
    else if (magnitude > 5.0 && magnitude <= 6.0)
    {
        printf("Moderate\n");
    }
    else if (magnitude > 6.0 && magnitude <= 7.0)
    {
        printf("Strong\n");
    }
    else if (magnitude > 7.0 && magnitude <= 8.0)
    {
        printf("Major\n");
    }
    else if (magnitude > 8.0 && magnitude <= 10.0)
    {
        printf("Great\n");
    }
    else if (magnitude > 10.0)
    {
        printf("Meteoric\n");
    }
    return 0;
}
```

Output:



Problem 5:

Write a program that examines three variables—x, y, and z—and prints the largest odd number among them. If none of them are odd, it should print a message to that effect.
Note: You have to take three values from user.

Code:

```
#include <stdio.h>
int main()
{
   // Declaring 3 integer datatype variables as x , y, z
   int x, y, z;
   // Take input values for variables from user and print
   printf("Enter First Odd Number: ");
   scanf("%d", &x);
   printf("Enter Second Odd Number: ");
   scanf("%d", &y);
   printf("Enter Third Odd Number: ");
   scanf("%d", &z);
   // conditions to check which odd number is largest among three odd numbers
   if (x > y && x > z && x % 2 != 0)
   {
      printf("%d is the largest odd number among them.\n", x);
   }
   else if (y > x && y > z && y % 2 != 0)
   {
      printf("%d is the largest odd number among them.\n", y);
   }
   else if (z > x && z > y && z % 2 != 0)
   {
      printf("%d is the largest odd number among them.\n", z);
   }
   else
      printf("User Entered the positive number so none of them is odd.\n");
   return 0;
}
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Largest_Odd_Number.out
Enter First Odd Number: 3
Enter Second Odd Number: 7
Enter Third Odd Number: 5
7 is the largest odd number among them.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Largest_Odd_Number.out
Enter First Odd Number: 11
Enter Second Odd Number: 6
Enter Third Odd Number: 8
11 is the largest odd number among them.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Largest_Odd_Number.out
Enter First Odd Number: 8
Enter Second Odd Number: 6
Enter Third Odd Number: 2
User Entered the positive number so none of them is odd.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$
```

Problem 6:

Write a C program to check whether an alphabet is a vowel or consonant. Your program should ask the user to input an alphabet
VOWELS ARE (A,E,I,O,U)

Code:

```c
#include <stdio.h>
int main() {
   // Declaring character datatype variable named c
   char c;
   // Declaring integer datatype variables named lowercase
   int lowerCase_Vowel, upperCase_Vowel;
   printf("Enter an alphabet: ");
   scanf("%c", &c);

   // Lower case vowels
   lowerCase_Vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');
   // Upper case vowels
   upperCase_Vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');
   // Conditions to check whether character entered by the user is vowel or consonant.
   if (lowerCase_Vowel || upperCase_Vowel)
      printf("%c is a vowel.\n", c);
   else
      printf("%c is a consonant.\n", c);
   return 0;
}
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL

Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Vowels_Or_Consonent.out
Enter an alphabet: A
A is a vowel.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Vowels_Or_Consonent.out
Enter an alphabet: e
e is a vowel.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$ ./Vowels_Or_Consonent.out
Enter an alphabet: d
d is a consonant.
Mubashers-MacBook-Pro:Assignment2 mubashershahzad$
```

Problem 7:

Write a program to ask a user to enter the date of birth and on the basis of input it display astrological sign associate with it.

Code:

```
/*
Write a program to ask a user to enter the date of birth and on the basis of
input it display astrological sign associate with it.*/

#include <stdio.h>
int main()
{
   int day, month;

   printf("Enter the day of birth: 1 to 31 = ");
   scanf("%d", &day);

   printf("Enter the month of birth: ");
   scanf("%d", &month);

   // for Capricorn
   if (month == 12 && day >= 22 && day <= 31 || month == 1 && day <= 19 && day > 0)
   {
      printf("Your Astrological Sign is: Capricorn (CAP).\n");
   }

   // for Aquarius
   else if (month == 1 && day >= 20 && day <= 31 || month == 2 && day <= 19 && day > 0)
   {
      printf("Your Astorlogical Sign is: Aquarius (AQU).\n");
   }

   // for Pisces
```

```
    else if (month == 2 && day >= 20 && day <= 29 || month == 3 && day <= 20 && day > 0)
    {
        printf("Your Astrological Sign is: Pisces (PIS).\n");
    }

    // for Aries
    else if (month == 3 && day >= 21 && day <= 31 || month == 4 && day <= 20 && day > 0)
    {
        printf("Your Astrological Sign is: Aries (ARI).\n");
    }

    // for Taurus
    else if (month == 4 && day >= 21 && day <= 30 || month == 5 && day <= 20 && day > 0)
    {
        printf("Your Astrological Sign is: Taurus (TAU).\n");
    }

    // for Gemini
    else if (month == 5 && day >= 21 && day <= 31 || month == 6 && day <= 20 && day > 0)
    {
        printf("Your Astrological Sign is: Gemini (GEM).\n");
    }

    // For Cancer
    else if (month == 6 && day >= 21 && day <= 30 || month == 7 && day <= 22 && day > 0)
    {
        printf("Your Astrological Sign is: Cancer (CAN).\n");
    }

    // for Leo
    else if (month == 7 && day >= 23 && day <= 31 || month == 8 && day <= 22 && day > 0)
    {
        printf("Your Astrological Sign is: Leo (LEO).\n");
    }

    // for Virgo
    else if (month == 8 && day >= 23 && day <= 31 || month == 9 && day <= 22 && day > 0)
        printf("Your Astrological Sign is: Virgo (VIR).\n");

    // for Libra
    else if (month == 9 && day >= 23 && day <= 30 || month == 10 && day <= 22 && day > 0)
    {
        printf("Your Astrological Sign is: Libra (LIB).\n");
    }

    // for Scorpio
    else if (month == 10 && day >= 23 && day <= 31 || month == 11 && day <= 22 && day >
0)
```

```
    {
        printf("Your Astrological Sign is: Scorpio (SCO).\n");
    }

    // for Sagittarius
    else if (month == 11 && day >= 23 && day <= 30 || month == 12 && day <= 21 && day >
0)
    {
        printf("Your Astrological Sign is: Sagittarius (SAG).\n");
    }
    else
    {
        printf("Invalid Birth date entered\n");
    }

    return 0;
}
```

Output: