PF Lab 6 Assignment

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Section- BCS-1D

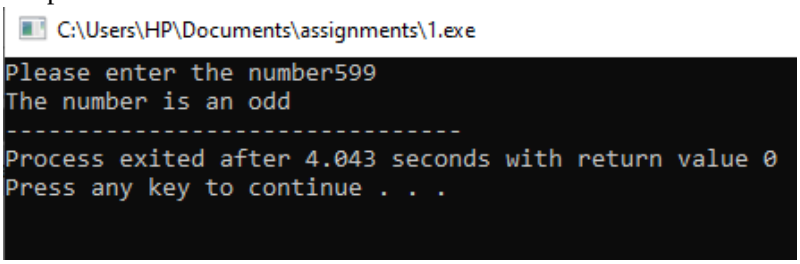
Task 01

Find out the given number is even or not using Ternary Operator in C.

Program:

```
//      Program to find whether the number is even or not
#include<stdio.h>

int main(){
int x;
        printf("Please enter the number");
        scanf("\n%d", &x);

        (x%2==0)? printf("The number is even"): printf("The number is an odd");
}
```

Output:



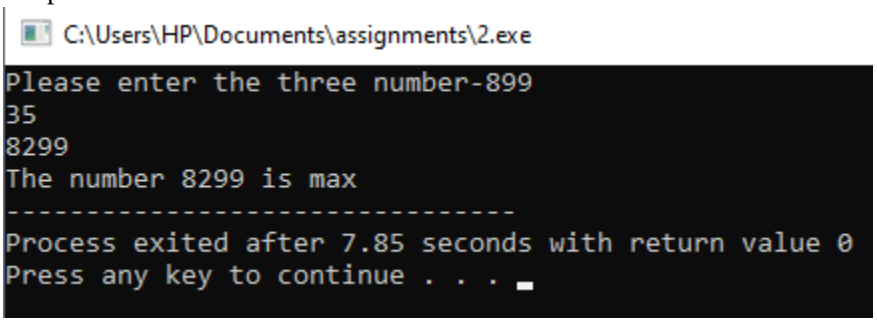
Task 02

Write a program to find the greatest number among three numbers using nested if else.

Program:

```
#include<stdio.h>
int main(){
int a,b,c;

        printf("Please enter the three number");
        scanf("%d %d %d", &a, &b, &c);

if (a!=b&&b!=c&&a!=c)          {

        if(a>b){
                if (b>c) printf("The number %d is max", a);
}

        if (b>a){
                if (a>c) printf ("The number %d is max", b);
}
        if (c>a&&c>b) {
        printf ("The number %d is max");
}

        }
        else printf("The numbers are equal, please enter unequal numbers");
}
```

Output:



Task 03

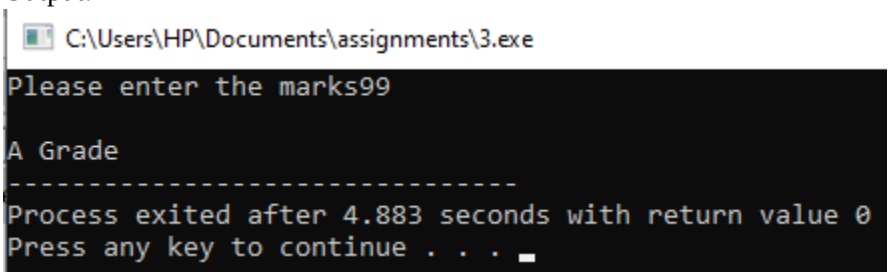
Rewrite the following program segment using the if-else statements instead of the ternary operator.

String grade = (mark >= 90) ? “A” : (mark >= 80) ? “B” : “C”;

Program:

```
#include<stdio.h>\
// program to find the grade
int main()
{
int x;
                                printf("Please enter the marks");
                                scanf("%d", &x);

                                if     (x>=90){
                                       printf("\nA Grade");}

                                else
                                {
if (x>=80&&x<90)

printf("B Grade");

else printf(" C Grade");
                                }
}
```

Output:



Task 04

A restaurant named SandwichesTown makes sandwiches. You order a sandwich and you're asked what kind of sandwich you would like: chicken, beef or vegetarian. You select vegetarian and you're asked to select from a choice of three vegetarian combinations:

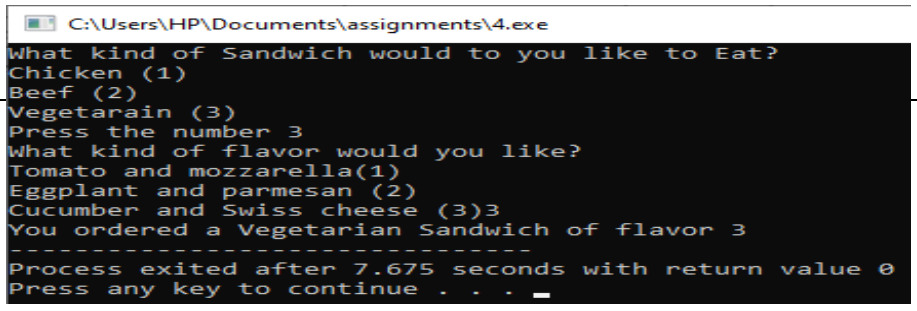
o Tomato and mozzarella
o Eggplant and parmesan
o Cucumber and Swiss cheese

In this case when you choose chicken or beef you have no more choices to make. But when you choose vegetarian, you'd then have to choose what kind of vegetarian sandwich you like. Write a program to implement these procedures.

Program:

```
#include <stdio.h>
main(){
        int choice;
        printf("What kind of Sandwich would to you like to Eat?\nChicken (1)\nBeef (2)\nVegetarain (3)\nPress the number ");
        scanf("%d", &choice);

        switch(choice){
                case 3:
                                char fl; //flavour
                                printf("What kind of flavor would you like? \nTomato and mozzarella(1) \nEggplant and parmesan (2) \nCucumber and Swiss cheese (3)");
                                scanf("\n%d", &fl);
                        switch (fl){
                                case 1: printf("You ordered a Vegetarian Sandwich of flavor 1");
                                break;

                                case 2: printf("You ordered a Vegeterian Sandwich of flavor 2");
                                break;

                                case 3 : printf("You ordered a Vegetarian Sandwich of flavor 3");
                                break;

                        }       break;
                case 1: printf("You ordered a Chicken Sandwich");
                                break;

                case 2: printf("You ordered a Beef Sandwich");
                break;
                                }
}
```

Output:



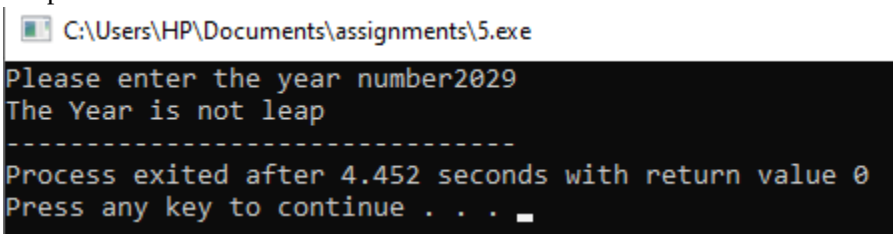
Task 05

A leap year is a year that has 366 days, instead of 365 days. It has one day extra in the month of February. Leap years occur once in 4 years, so any year that is completely divisible by four should be a leap year. But this is not always true. If there is some year and it is divisible by hundred, it will be a leap year only if it is also divisible by four hundred. Given a year, check if it a leap year or not using nested if else statement.

Program:

```
#include<stdio.h>

int main(){
 int x;
        printf("Please enter the year number");
        scanf("%d", &x);

        if(x%100==0){
                if(x%400==0)
                  printf("The Year is leap");
                else
                 printf("The year is not leap");
}
        else
        {
         if (x%4==0)
        printf("The Year is leap");
        else printf ("The Year is not leap");
        return 0;
}
}
```

Output:



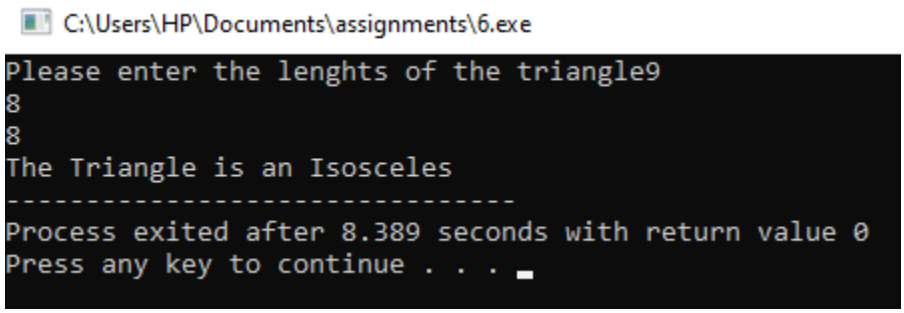
Task 06

Check whether the triangle is equilateral, scalene, or isosceles.
• Isosceles triangle: In geometry, an isosceles triangle is a triangle that has two sides of equal length.
• Equilateral triangle: In geometry, an equilateral triangle is a triangle in which all three sides are equal.
• Scalene triangle: A scalene triangle is a triangle that has three unequal sides.

Program:

```
#include<stdio.h>

int main(){

                        int x, y, z;

printf ("Please enter the lenghts of the triangle");
scanf("%d %d %d", &x, &y, &z);

if(x==y||y==x||y==z) {

                        if
                        (x==y&&y==z&&z==x)
                        printf("The Triangle is a Equilateral");

                        else
                        printf("The Triangle is an Isosceles");
}
                        else
                        printf("The Triangle is an Scalene");

}
```

Output:



QUESTION#7

Write a program to control a coffee machine. Allow the user to input the type of coffee as B for Black and W for White. Ask the user if the cup size is double and if the coffee is manual. The following table details the time chart for the machine for each coffee type. Display a statement for each step. If the coffee size is double, increase the baking time by 50 percent. Use functions to display instructions to the user and to compute the coffee time.

Operation	White Coffee	Black Coffee
Put Water	15 mins	20 mins
Sugar	15 mins	20 mins
Mix Well	20 mins	25 mins
Add Coffee	2 mins	15 mins
Add Milk	4 mins	-
Mix Well	20mins	25 mins

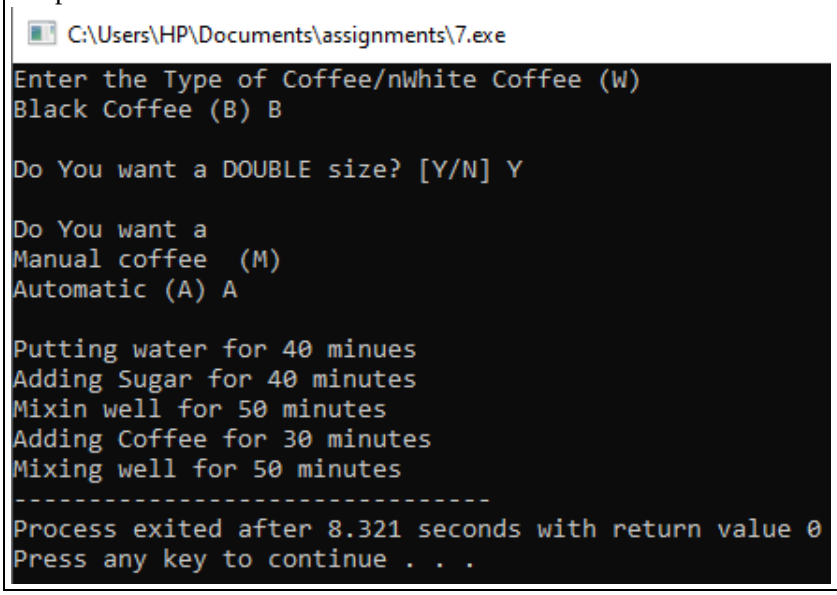
Note: Use switch structure to solve this problem.

Program:

```
#include <stdio.h>
main()
{
        char x, size, type ; //user input
        printf("Enter the Type of Coffee/nWhite Coffee (W)\nBlack Coffee (B) ");
        scanf(" %c", &x);

        printf("\nDo You want a DOUBLE size? [Y/N] ");
        scanf(" %c", &size);

        printf("\nDo You want a \nManual coffee  (M) \nAutomatic (A) ");
        scanf(" %c", &type);

        switch (x){
            case 'W':{
                    switch (size){
                            case 'N':{
                                    printf("\nPutting water for 15 minues\n");
                                    printf("Adding Sugar for 15 minutes\n");
                                    printf("Mixin well for 20 minutes\n");
                                    printf("Adding Coffee for 2 minutes\n");
                                    printf("Adding milk for 4 minutes\n");
                                    printf("Mixing well for 20 minutes");
                                break;
                            }
                            case 'Y': {
                                    printf("\nPutting water for 30 minues\n");
                                    printf("Adding Sugar for 20 minutes\n");
                                    printf("Mixin well for 40 minutes\n");
                                    printf("Adding Coffee for 4 minutes\n");
                                    printf("Adding milk for 8 minutes\n");
                                    printf("Mixing well for 40 minutes");
```

```
                                        break;
                                    }
                                }
                                break;
                        }
                        case 'B':{
                                switch (size){
                                        case 'N':{
                                                        printf("\nPutting water for 20 minues\n");
                                                        printf("Adding Sugar for 20 minutes\n");
                                                        printf("Mixin well for 25 minutes\n");
                                                        printf("Adding Coffee for 15 minutes\n");
                                                        printf("Mixing well for 25 minutes");
                                                break;
                                        }
                                        case 'Y':{
                                                        printf("\nPutting water for 40 minues\n");
                                                        printf("Adding Sugar for 40 minutes\n");
                                                        printf("Mixin well for 50 minutes\n");
                                                        printf("Adding Coffee for 30 minutes\n");
                                                        printf("Mixing well for 50 minutes");
                                                break;
                                        }
                                }
                                break;
                        }
                }
}
```

Output:



Task 08

You are searching for a department in a university and you're asked to select a school from a choice of three schools namely:

• School of Computer Science • School of Business • School of Engineering

Having selected a school you are again provided with a list of departments that fall under the department namely:

• School of Computer Science

o Department of Informatics o Department of Machine Learning

• School of Business

o Department of Commerce o Department of purchasing

• School of Engineering

o Department of Mechanical Engineering o Department of Mechatronics Engineering

After selecting the department, it shows the list of courses taught in each particular department.

• School of Computer Science

o Department of Informatics

▪ Course A ▪ Course B ▪ Course C ▪ Course D

o Department of Machine Learning

▪ Course E ▪ Course F ▪ Course G ▪ Course H ▪ Course I

• School of Business

o Department of Commerce

▪ Course X ▪ Course Y ▪ Course Z

o Department of purchasing

▪ Course M ▪ Course N ▪ Course O ▪ Course P

• School of Engineering

o Department of Mechanical Engineering

▪ Course R ▪ Course S

o Department of Mechatronics Engineering

▪ Course J ▪ Course K ▪ Course L

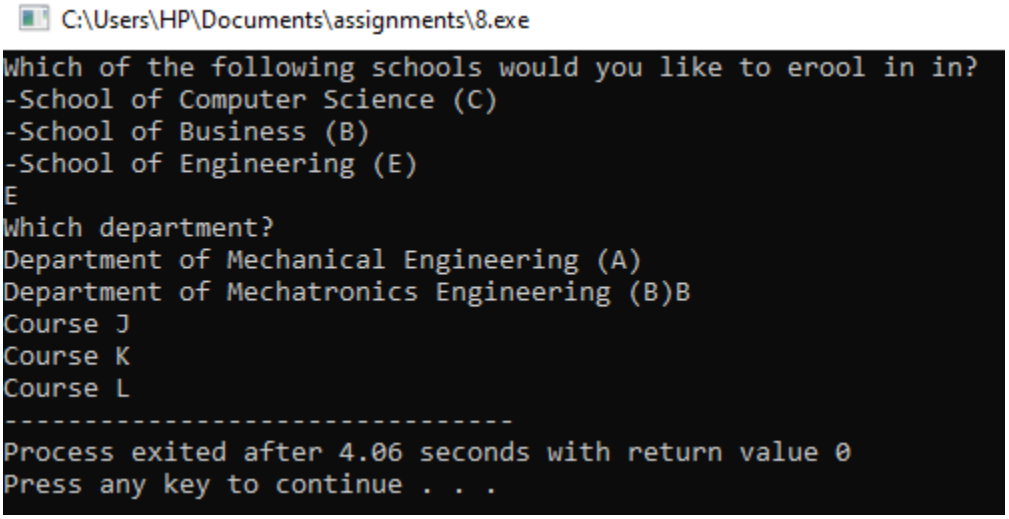
Write a program to make the above logic implementable.

Program:

```
#include <stdio.h>
int main(){
                                char choice; //choice of school

                                printf("Which of the following schools would you like to erool in in?");
                                printf("\n-School of Computer Science (C)\n-School of Business (B)\n-
School of Engineering (E) \n");
                                scanf("%c", &choice);

                                switch (choice) {
                                        case 'C': {
                                                char dept;
                                                printf("\nWhich department?\n");
                                                printf("\n Department of Informatics (A) \n Department
of Machine Learning (B)\n");
                                                scanf("\n%c", &dept);

                                                 switch (dept){
                                                        case 'A': printf(" Course A \n Course B \n
Course C \n Course D");
                                                        break;
                                                        case 'B': printf(" Course E \n Course F \n Course
G \n Course H \n Course I");
                                                        break;
                                                }
                                                                        break;
                                                }

                                        case 'B': {
                                                char dept;
                                                printf("\nWhich department?");
                                                printf("\n Department of Commerce (A) \n Department
of purchasing (B)\n");
                                                scanf("\n%c", &dept);

                                                switch(dept){
                                                        case 'A': printf("\nCourse X \nCourse Y
\nCourse Z");
                                                        break;
                                                        case 'B': printf("\nCourse M \nCourse N
\nCourse O \nCourse P");
                                                        break;
                                                }
                                                break;
                                        }
```

```
                                        case 'E':{
                                                char dept;
                                                printf("Which department?");
                                                printf("\nDepartment of Mechanical Engineering (A)
\nDepartment of Mechatronics Engineering (B)");
                                                scanf("\n%c", &dept);

                                                switch (dept){
                                                        case 'A': printf("Course R \nCourse S");
                                                        break;
                                                        case 'B': printf("Course J \nCourse K \nCourse
L");

                                                        break;
                                                }
                                        break;
                                        }
                                                  }
}
```

Output:



Task 09

Mortgage Calculator) Develop a C program to calculate the interest accrued on a bank customers mortgage.

For each customer, the following facts are available:

a) the account number

b) the mortgage amount

c) the mortgage term

d) the interest rate

The program should input each fact, calculate the total interest payable (= mortgage amount × interest rate ×mortgage term), and add it to the mortgage amount to get the total amount payable. It should calculate the required monthly payment by dividing the total amount payable by the number of months in the mortgage term. The program should display the required monthly payment rounded off to the nearest dollar. The program should process each customer's account at a time. Here is a sample input/ output dialog:

Enter account number (-1 to end): 100
Enter mortgage amount (in dollars): 6500
Enter mortgage term (in years): 3
Enter interest rate (as a decimal): 0.075
The monthly payable interest $ 221

Enter account number (-1 to end): 200
Enter mortgage amount (in dollars): 12000
Enter mortgage term (in years): 10
Enter interest rate (as a decimal): 0.045
The monthly payable interest is: $ 145

Enter account number (-1 to end): -1

Program:

```
#include<stdio.h>

int main(){
	float an, ma, mt, r;

	printf("Enter Account Number (-1 to End) ");
	scanf("%d", &an);

	printf("\nEnter Mortgage Ammount (in dollars) ");
	scanf("%d", &ma);

	printf("\nEnter the Mortgage term ");
	scanf("%d", &mt);

	printf("\nEnter the interest rate ");
	scanf("%d", &r);

	if(an>-1){
```

```
        float tap= (ma*r*mt) + ma;
        float mpi= tap/mt; //monthly payable interest

        printf("\nMonthly Payable Interest is %.2f", round(mpi));
                        }
        else
         printf("Please enter a value of account number greater than -1");
}
```

Output: