Assignment2

Question1:

Description:

In pass/fail course,a student passes if the grade is greater than or equal to 70 and fails if the grade is lower. Write a C program that accepts a grade and prints the message"A passing grade" or "A failing grade",as appropriate.

code:

```c
#include <stdio.h>

int main() {

  int grade;

  //input
    printf("Please input the grade: ");
  scanf("%d", &grade);

  //output
  if(grade >= 70)
    printf("A passing grade");
  else
    printf("A failing grade");
  return 0;
}
```

input:

grade : 40、80

output:

```
Please input the grade: 40
A failing grade
```

```
Please input the grade: 80
A passing grade
```

Question2:

Description:

The area of any triangle with sides a,b,and c can be computed using Heron's fomula area=sqrt(s(s-a)(s-b)(s-c)) where s=(a+b+b)/2. Using these formula,write a C program thay accepts values for the sides a,b and c from the user.Then calculate and display the area for the case where the value s(s-a)(s-b)(s-c) is positive.If the value of this expressionis is negative,your program should display a message indicating that the three sides entered do not represent the sides of a triangle.

code:

```
#include <stdio.h>
#include <math.h>

int main() {

  int a, b, c;
  double area;
  double s;

  //input
  printf("Please input the length of the triangle‘s sides: ");
  scanf("%d %d %d", &a, &b, &c);

  s = double((a + b + c) / 2);
  area = sqrt(s*(s-a)*(s-b)*(s-c));

  //output
    if(a + b <= c || b + c <= a || a + c <= b)
        printf("Not a valid triangle.");
    else
    printf("The area of the triangle is %.2f.", area);
  return 0;
}
```

input:

the length of the triangle's sides:3 4 5

output:

```
Please input the length of the triangle‘s sides: 3 4 5
The area of the triangle is 6.00.
```

Question3:

Description:

The interest rate used on funds deposited in a bank is determined by the amount of time the money is left on deposit.For a particular bank,the following schedule is used. Write a C program that accepts the time that funs are left on deposit and displays the interest rate corresponding to the time entered.

Time on Deposit Inetrest Rate

time>=5 years 0.045

4<=time<5 years 0.04

3<=time<4 years 0.035

2<=ytime<3 years 0.03

1<=time<2 years 0.025

time<1 years 0.02

code:

```
#include <stdio.h>
#include <math.h>

int main() {

  int year;

  //input
  printf("Please input the depositing time: ");
  scanf("%d", &year);

  //output
  if(year < 1)
    printf("The interest rate is 0.02");
  else if(year < 2)
    printf("The interest rate is 0.025");
  else if(year < 3)
    printf("The interest rate is 0.03");
  else if(year < 4)
    printf("The interest rate is 0.035");
  else if(year < 5)
    printf("The interest rate is 0.04");
  else
    printf("The interest rate is 0.045");
  return 0;
}
```

input:

year : 5

output:

```
Please input the depositing time: 5
The interest rate is 0.045
```

Question4:

Description:

Two float numbers and one integer variable opselect are entered. Use a switch statement to select the arithmetic operation(addition,multiplication,or division) to be performed depending on the value of the variable opselect.

code:

```c
#include <stdio.h>

int main() {

    float a,b,c;
    printf("please enter the variables : ");
    scanf("%f %f",&a,&b);

    char opt;

    getchar();
    printf("please enter the operator : ");
    opt = getchar();

    switch(opt){
        case '+':
            c=a+b;
            printf("the result is : %f",c);
            break;
        case '-':
            c=a-b;
            printf("the result is : %f",c);
            break;
        case '*':
            c=a*b;
            printf("the result is : %f",c);
            break;
        case '/':
            c=a/b;
```

```
            printf("the result is : %f",c);
            break;
    }
    return 0;
}
```

input:

a,b : 3.1, 3.2

operator:-,+

output:

```
please enter the variables : 3.1 3.2
please enter the operator : +
the result is : 6.300000
```

```
please enter the variables : 3.1 3.2
please enter the operator : -
the result is : -0.100000
```

Question5:

Description:

All years that are evenly divisible by 400 or are evenly divisible by 4 and not evenly divisible by 100 are leap years.For example,since 1600 is evenly divisible by 400,the year 1600 is a leap year. Similarly,since 1988 is evenly divisible by 4 but not by 100,the year 1988 was also a leap year.Using this information,write a C program that accepts the year as a user input,determines if the year is a leap year,and displays an appropriate message that tells the user if the entered year is or is not a leap year.

code:

```
#include <stdio.h>

int main() {

  int year;

  //input
  printf("Please input the year: ");
```

```
  scanf("%d", &year);

  //output
  if(!(year % 400))
    printf("%d is leap year.", year);
  else if(year % 100 && !(year % 400))
    printf("%d is not leap year.", year);
  else if(!(year % 4))
    printf("%d is leap year.", year);
  else
    printf("%d is not leap year.", year);
  return 0;
}
```

input:

year : 2020

output:

```
Please input the year: 2020
2020 is leap year.
```