SOL_ PW _N° 04

SOL Exercise N° 01:

Program 01

```c
#include <stdio.h>
int main() {
    int marks;
    printf("enter marks(0-100) \n");
    scanf("%d", &marks );
     if ( marks >30 )
        {
        printf(" pass");
    }
return 0;
}
```

Program 01_RUN 1

OUT PUT :

enter marks(0-100)
40
pass

Program 01_ RUN 2

OUT PUT :

enter marks(0-100)
20

```c
#include <stdio.h>
int main() {
    int marks;
    printf("enter marks(0-100) \n");
    scanf("%d", &marks );
    if (marks <= 30){
         printf ("fail\n");
    }
    if ( marks >30) {
         printf(" pass");
        }
    return 0;
}
```

Program 02 _RUN 1

OUT PUT :

enter marks(0-100)
60
pass

Program 02_ RUN 2

OUT PUT :

enter marks(0-100)
15
fail

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SOL Exercise N° 02:

Q 1 :

Program 01

```c
// C Program to Check Even or Odd Using Modulo Operator
#include <stdio.h>
int main(){
    int N = 11;
    // Condition for even
    if (N % 2 == 0)  {
        printf("Even");
    }
    // Condition for odd number
    else  {
        printf("Odd");
    }
    return 0;
}
```

Program 01
OUT PUT :
Odd

Program 02

```c
// C Program to Check Even or Odd Using Modulo Operator
#include <stdio.h>
int main(){
    int N = 11;
    // Find the remainder
    int r = N % 2;
    // Condition for even
    if (r == 0)  {
        printf("Even");
    }
    // Condition for odd number
    else  {
        printf("Odd");
    }
    return 0;
}
```

Program 02
OUT PUT :
Odd

By Dr. KECITA farouk

Program 03:

```c
// C Program to Check Even or Odd Using Modulo Operator
#include <stdio.h>
int main(){
    int N;
    printf("Enter an integer number:\n");
    scanf("%d",&N);
    // Find the remainder
    int r = N % 2;
    // Condition for even
    if (r == 0)  {
        printf("%d is an even number",N);
    }
    // Condition for odd number
    else  {
        printf("%d is an odd number",N);
    }
    return 0;}
```

Program 02 _RUN 1

OUT PUT:

Enter an integer number:
30
30 is an even number

Program 02_ RUN 2

OUT PUT:

Enter an integer number:
21
21 it is an odd number

Q 2 : Program 01

```c
/*C program to find maximum between two numbers*/
#include <stdio.h>
int main() {
  int num1, num2;
  printf("Enter two numbers: \n");
  scanf("%d%d", &num1, &num2);
    if(num1 > num2) {
    printf("%d is maximum", num1);
    }
   else if (num2 > num1) {
        printf("%d is maximum", num2);
    }
    else (num1 == num2) {
       printf("Both are equal");
    }
     return 0; }
```

Program 01_ RUN 1

OUT PUT:

Enter two numbers:
18
5
18 is maximum

Program 01_ RUN 1

OUT PUT:

Enter two numbers:
18
40
40 is maximum

Program 01_ RUN 2

OUT PUT:

Enter two numbers:
20
20
Both are equal

SOL Exercise N° 03:

Q1 : Program 01

```c
/* C program to check if the number is both greater than 20 and is odd */
#include <stdio.h>
int main() {
    int n;
    /* Input number from user */
    printf("Enter any number: ");
    scanf("%d", &n);
    if(n > 20)
    {
     if(n %2==0){
         printf("%d is greater than 20 and is odd",n);
        }
    }
    else{
         printf("%d does't meet at least one of the specified conditions",n);
    }
    return 0;  }
```

Program 01_ RUN 1
OUT PUT:
Enter any number: 36
36 is greater than 20 and is odd

Program 01_ RUN 2
OUT PUT:
Enter any number: 25

Program 01_ RUN 2
OUT PUT:
Enter any number: 15
15 does't meet at least one of the specified conditions

Program 02

```c
/* C program to check if the number is both
 greater than 20 and is odd */
#include <stdio.h>
int main() {
    int n;
    /* Input number from user */
    printf("Enter any number: ");
    scanf("%d", &n);
    if(n > 20)
    {
     if(n %2==0){
         printf("%d is greater than 20 and is odd",n);
        }
        else{
         printf("%d is greater than 20 and is enen",n);
        }
    }
    else{
        if(n %2==0){
         printf("%d is less than 20 and is odd",n);
        }
        else{
         printf("%d is less than 20 and is enen",n);
        }
    }
    return 0;
}
```

Program 01_ RUN 1
OUT PUT:
Enter any number: 55
55 is greater than 20 and is enen

Program 01_ RUN 2
OUT PUT:
Enter any number: 60
60 is greater than 20 and is odd

Program 01_ RUN 3
OUT PUT:
Enter any number: 13
13 is less than 20 and is enen

Program 01_ RUN 4
OUT PUT:
Enter any number: 10
10 is less than 20 and is odd

Q2 : Program 01

```c
/* C program to find maximum between three
numbers using nested if */
#include <stdio.h>
int main() {
    int num1, num2, num3, max;
    /* Input three numbers from user */
    printf("Enter three numbers:\n ");
    scanf("%d%d%d", &num1, &num2, &num3);
    if(num1 > num2) {
        if(num1 > num3)
        {
            max = num1;
        }
        else
        {
            max = num3;
        }
    }
    Else {
        if(num2 > num3)
        {
            max = num2;
        }
        else
        {
            max = num3;
        }
    }
    /* Print maximum value */
    printf("Maximum = %d", max);
    return 0; }
```

Program 01_ RUN 1
OUT PUT:
Enter three numbers:
70
100
20
Maximum = 100

Program 01_ RUN 2
OUT PUT:
Enter three numbers:
23
20
80
Maximum = 80

SOL Exercise N° 04:

Q1 : Program 01

```c
/* C program to check positive negative
 or zero using simple if statement  */
#include <stdio.h>
int main()
{
    int num;
    /* Input number from user */
    printf("Enter any number: ");
    scanf("%d", &num);
    if(num > 0)
    {
        printf("Number is POSITIVE");
    }
    else if(num < 0)
    {
        printf("Number is NEGATIVE");
    }
    else(num == 0)
    {
        printf("Number is ZERO");
    }
    return 0; }
```

Program 01_ RUN 1
OUT PUT:
Enter any number: -4
Number is NEGATIVE

Program 01_ RUN 2
OUT PUT:
Enter any number: 0
Number is ZERO

Program 01_ RUN 3
OUT PUT:
Enter any number: 15
Number is POSITIVE

SOL Exercise N° 05:

Q1 : Program 01

```c
/* C program to find all roots of a quadratic equation */

#include <stdio.h>
#include <math.h> /* Used for sqrt() */
int main() {
 float a, b, c;
 float root1, root2,d;
 printf("Enter values of a, b, c of q_E (aX^2 + bX + c):\n");
 scanf("%f%f%f", &a, &b, &c);
 /* Find discriminant of the equation */
 d= (b * b) - (4 * a * c);
 printf("discriminant=%.2f \n",d);
 if(d > 0) {
    root1 = (-b + sqrt(d)) / (2*a);
    root2 = (-b - sqrt(d)) / (2*a);
    printf("root1= %.2f\n root2= %.2f \n", root1, root2);
  }
  else if(d == 0) {
    root1 = root2 = -b / (2 * a);
    printf("root1= %.2f\n root2= %.2f \n", root1, root2);
  }
  else if(d < 0) {
    printf(" No solutions !!!");
  }
    return 0;  }
```

Program 01_ RUN 1
OUT PUT:

```
Enter values of a, b, c of q_E (aX^2 + bX + c):
2
3
1
discriminant=1.00
root1= -0.50
root2= -1.00
```

Program 01_ RUN 2
OUT PUT:

```
Enter values of a, b, c of q_E (aX^2 + bX + c):
2
4
2
discriminant=0.00
root1= -1.00
 root2= -1.00
```

SOL Exercise N° 06:

Q1 : Program 01

```c
// C program to calculate profit or loss
#include <stdio.h>
int main() {
int cp,sp, diff;
//Input cost price and selling price of a
product
printf("Enter cost price: ");
scanf("%d", &cp);
printf("Enter selling price: ");
scanf("%d", &sp);
diff = sp - cp;
// Calculate Profit
if(diff > 0) {
printf("Profit = %d", diff);
}
// Calculate Loss
else if(diff < 0) {
printf("Loss = %d", diff);
}
// Neither profit nor loss
else {
printf("No Profit No Loss.");
}
return 0; }
```

Program 01_ RUN 1

OUT PUT:

Enter cost price: 1200
Enter selling price: 900
Loss = 300

Program 01_ RUN 2

OUT PUT:

Enter cost price: 1500
Enter selling price: 2000
Profit = 500

SOL Exercise N° 07:

Q1 : Program 01

```c
/*C program to enter marks of five subjects and
 find percentage and grade*/
#include <stdio.h>
int main() {
    float ph, ch, bi, ma, co, per;
    /* Input marks of five subjects from user */
    printf("Enter five subject marks:\n ");
    scanf("%f%f%f%f%f", &ph, &ch, &bi, &ma, &co);
    /* Calculate percentage */
    per = (ph+ ch + bi + ma + co) / 5;
    printf("Percentage = %.2f\n", per);
    /* Find grade according to the percentage */
    if(per >= 90){
        printf("Grade A");
    }
    else if(per >= 80) {
        printf("Grade B");
    }
    else if(per >= 70) {
        printf("Grade C");
    }
    else if(per >= 60) {
        printf("Grade D");
    }
    else if(per >= 40) {
        printf("Grade E");
    }
    else {
        printf("Grade F");
    }
    return 0; }
```

Program 01_ RUN 1
OUT PUT:

```
Enter five subject marks:
 34
56
54
56.77
33.55
Percentage = 46.86
Grade E
```

Program 01_ RUN 2
OUT PUT:

```
Enter five subject marks:
 56.78
79.98
90
80.7
50.6
Percentage = 71.61
Grade C
```

SOL Exercise N° 08:

Q1 : Program 01

```c
/* C program to print day of week using switch
case*/
#include <stdio.h>
int main() {
 int weekNum;
 /* Input week number from user */
 printf("Enter week number(1-7):\n ");
 scanf("%d", &weekNum);
 switch(weekNum) {
        case 1:
            printf("Sunday");
            break;
        case 2:
            printf("Monday");
            break;
        case 3:
            printf("Tuesday");
            break;
        case 4:
            printf("Wednesday");
            break;
        case 5:
            printf("Thursday");
            break;
        case 6:
            printf("Friday");
            break;
        case 7:
            printf("Saturday");
            break;
            default:
    printf("Invalid input! Please enter week
number between 1-7");
    }
    return 0; }
```

Program 01_ RUN 1
OUT PUT:

```
Enter week number (1-7):
5
Friday
```

Program 01_ RUN 2
OUT PUT:

```
Enter week number (1-7):
8
Invalid input! Please enter
week number  between 1-7
```

SOL Exercise N° 09:

Q1 : Program 01

```c
/*C program to find maximum between
two numbers using switch case */
#include <stdio.h>
int main() {
float num1, num2;
// Input two numbers from user
printf("Enter two numbers:\n ");
scanf("%f%f", &num1, &num2);
// Expression (num1 > num2) will return either 0
or 1
    switch(num1 > num2)
    {
    // If condition (num1>num2) is false (0)
     case 0:
            printf("maximum = %.2f ", num2);
            break;
    // If condition (num1>num2) is true (1)
     case 1:
            printf("maximum = %.2f", num1);
            break;
    }
    return 0;
 }
```

Program 01_ RUN 1
OUT PUT:
Enter two numbers:
45
60.5
maximum = 60.50

Program 01_ RUN 2
OUT PUT:
Enter two numbers:
100
15
maximum = 100.00

SOL Exercise N° 10:

Q1 : Program 01

```c
/*C program to check positive negative
or zero using switch case */
#include <stdio.h>
int main() {
    float num;
    printf("Enter any number:\n ");
    scanf("%f", &num);
    switch (num > 0) {
    // Num is positive
     case 1:
        printf("%.2f is positive", num);
     break;
    // Num is either negative or zero
     case 0:
         switch (num < 0) {
            case 1:
             printf("%.2f is negative", num);
             break;
            case 0:
             printf("%.2f is zero", num);
             break;
            }
        break;
    }
    return 0;}
```

Program 01_ RUN 1
OUT PUT:
Enter any number:
0
0.00 is zero

Program 01_ RUN 2
OUT PUT:
Enter any number:
50
50.00 is positive

Program 01_ RUN 3
OUT PUT:
Enter any number:
-34
-34.00 is negative

SOL Exercise N° 11:

Q1 : Program 01

```c
#include <stdio.h>
int main() {
  char op;
  float num1, num2, sum, sub, prod, div;
  printf("Enter an operator (+, -, *, /): ");
  scanf("%c", &op);
  printf("Enter two numbers:\n ");
  scanf("%f %f", &num1, &num2);
  switch (op) {
    case '+':
      sum=num1 + num2;
      printf("%.2f + %.2f = %.2f", num1, num2, sum);
      break;
    case '-':
      sub=num1 - num2;
      printf("%.2f - %.2f = %.2f", num1, num2, sub);
      break;
    case '*':
     prod=num1 * num2;
     printf("%.2f * %.2f = %.2f", num1, num2, prod);
      break;
    case '/':
      div=num1 / num2;
      printf("%.2f / %.2f = %.2f", num1, num2, div);
      break;
    // operator doesn't match any case constant
    default:
      printf("Error! operator is not correct");
  }
  return 0; }
```

Program 01_ RUN 1
OUT PUT:
Enter an operator (+, -, *, /): /
Enter two operands:
12
2
12.00 / 2.00 = 6.00

Program 01_ RUN 2
OUT PUT:
Enter an operator (+, -, *, /): +
Enter two numbers:
10
15
10.00 + 15.00 = 25.00

Program 01_ RUN 3
OUT PUT:
Enter an operator (+, -, *, /):
%
Enter two numbers:
34
3
Error! operator is not correct

Program 01_ RUN 4
OUT PUT:
Enter an operator (+, -, *, /): *
Enter two numbers:
2
9.9
2.00 * 9.90 = 19.80

By Dr. KECITA farouk