ASSIGNMENT 4 ANSWER

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1. **Check Whether a Character is a Vowel or Consonant ?**

Program:-

```
#include <stdio.h>

int main() {
   char c;
      printf("Enter Alphabet : ");
      scanf("%c",&c);
      if(c=='A'||c=='E'||c=='I'||c=='O'||c=='U'||c=='a'||c=='e'||c=='i'||c=='o'||c=='u')
        printf("Alphabet %c is vowel.",c);
      else
        printf("Alphabet %c is consonant.",c);

   return 0;
}
```

Output:-

```
Enter Alphabet : A
Alphabet A is vowel.
```

2. Find Roots of a Quadratic Equation (Using else if ladder) ?

Program:-

```
#include<stdio.h>
#include<math.h>
int main ()
{
   float a,b,c,r1,r2,d,img;
   printf("Enter the value of a : ");
   scanf("%f",&a);
   printf("Enter the value of b : ");
   scanf("%f",&b);
   printf("Enter the value of c : ");
   scanf("%f",&c);
   d=(b*b)-4*a*c;
   if (d>0)
   {
   r1= (-b+ sqrt (d))/ 2*a ;
   r2=(-b- sqrt (d))/ 2*a ;
   printf("Quadratic equation has two roots \n");
   printf("two roots are r1=%g & r2= %g ",r1,r2);
   }
   else if(d==0)
   {
      r1=r2=(-b/2*a);
      printf("two roots are equal\n");
      printf("r1= %g & r2= %g",r1,r2);
   }
   else if (d<0)
   {
    r1=r2=(-b/2*a);
    img= sqrt(-d)/2*a;
    printf("two roots are imaginary= %g \n",img);
    }
   return 0;
}
```

Output:-

```
Enter the value of a : 1
Enter the value of b : 2
Enter the value of c : -6
Quadratic equation has two roots
two roots are r1=1.64575 & r2= -3.64575
```

3.Check Leap Year (Using if..else) ?

Program:-

```
#include <stdio.h>

int main() {
   int year;

   printf(" Enter a Year : ");
   scanf("%d",&year);
   if (year%4==0)
   {
      printf("Yes %d is a leap year.",year);
   }
   else
   {
      printf("No %d is not a leap year.",year);
   }

   return 0;
}
```

Output:-

```
Enter a Year : 2020
Yes 2020 is a leap year.
```

4. check which number nearest to the value 100 among two given integers. Return

0 if the two numbers are equal. (Using nested if...else)?

Program:-

```
#include <stdio.h>
int main() {
   int num1,num2,dn1,dn2;
   printf("enter num1: " );
   scanf("%d",&num1);
   printf("enter num2: " );
    scanf("%d",&num2);
    dn1=100-num1;
    dn2=100-num2;
   if(dn1<=dn2){
   if(dn1==dn2){
 printf("num1 %d is equal num2 %d",num1,num2);}
   else{
  printf("num1 %d is nearest to 100.",num1);}}
  else{
  printf("num2 %d is nearest to 100.",num2);}

    return 0;
}
```

Output:-

enter num1: 55

enter num2: 56

num2 56 is nearest to 100.

5. check three given integers (small, medium and large) and return true if the difference between small and medium and the difference between medium and large is same. (Using nested if...else)?

Program:-

```
#include <stdio.h>


int main() {
   int s,m,l;
   printf("enter 1st no : ");
   scanf("%d",&s);
   printf("enter 2nd no : ");
   scanf("%d",&m);
   printf("enter 3rd no : ");
   scanf("%d",&l);


   if ((s<m&&m<l)||(m<s&&s<l)||(l<m&&m<s)||(l<s&&s<m)||(m<l&&l<s))
   {
      if((m-s==l-m)||(s-m==l-s)||(m-l==s-m)||(s-l==m-s)||(l-m==s-l))
      {
         printf("Difference in between small and medium and medium and large is same.");
      }
```

```
    else {
    printf("Difference in between small and medium and medium and large is not same.");
      }}
      else
      printf("all the entered no are same . ");
  return 0;
  }
```

Output:-

enter 1st no : 4

enter 2nd no : 8

enter 3rd no : 12

Difference in between small and medium and medium and large is same.

6. Calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. The charge are as follow :

Unit Charge/unit
upto 199 @1.20
200 and above but less than 400 @1.50
400 and above but less than 600 @1.80
600 and above @2.00
If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/- (Using else if ladder)

Program:-

```
#include <stdio.h>

int main() {

   char name;

   int id;

   int unit;

   float bill;

   float c1=1.20,c2=1.50,c3=1.80,c4=2.00,sc=0.15;

   printf("Enter Customer Name : ");

   scanf("%c",&name);

   printf("Enter Customer id : ");

   scanf("%d",&id);


   printf("Enter the electricity units : ");

   scanf("%d",&unit);

   if (unit<=199){
```

```
    bill=unit*c1;
       }
    else if (unit>=200&&unit<400){
    bill=unit*c2;
       }
    else if (unit>=400&&unit<600)
    {
    bill= 400*c3;
    }
    else if (unit>=600)
    {
    bill=600*c4;
     }
     if (bill>400)
     {
     bill=bill + (bill*sc);
     }
     if (bill<100)
     {
        bill=100;
     }
     printf(" Your unit is %d. and bill is %g.",unit,bill);
    return 0;
}
```

Output:-

Enter Customer Name : a

Enter Customer id : 121

Enter the electricity units : 400

Your unit is 400. and bill is 828.

7. The marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects. The student gets a grade as per the following rules: (Using else if ladder)

Average Grade
90-100 A
80-89 B
70-79 C
60-69 D
0-59 F

Program:-

```
#include <stdio.h>

int main() {

   float m1,m2,m3,total;

   float avg;

   printf("Enter mark1 = ");

   scanf("%f",&m1);

    printf("Enter mark2 = ");

    scanf("%f",&m2);

     printf("Enter mark3 = ");

     scanf("%f",&m3);
```

```
 total= (m1+m2+m3);
 printf("Total marks obtained is : %g \n",total);
 avg=(total/3);
 printf("average mark is : %g\n",avg);
 if (avg>=90&&avg<100)
 {
    printf("secured \"A\" grade");
 }
else if (avg>=80&&avg<90)
{
   printf("secured \"B\" grade");
}
 else if (avg>=70&&avg<80)
 {
    printf("secured \"C\" grade");
 }
else if (avg>=60&&avg<70)
 {
    printf("secured \"D\" grade");
 }
else if (avg>=0&&avg<60)
 {
    printf("secured \"F\" grade");
 }
 return 0;
```

}

Output:-

Enter mark1 = 50.6

Enter mark2 = 80.6

Enter mark3 = 90.5

Total marks obtained is : 221.7

average mark is : 73.9

secured "C" grade

8. PRINT TOTAL NUMBER OF DAYS IN A MONTH USING SWITCH CASE.

PROGRAM:-

```
#include<stdio.h>
int main()
{
   int month;
   printf("Enter Month No: ");
   scanf("%d",&month);
   switch (month)
   {
   case 1:
   printf("Month no is %d\tand Days are 31 days Month name is : January ",month);
   break;
   case 2:
   printf("Month no is %d\t and Days are 28 or 29 days\t Month name is : \"February\"
",month);
   break;
   case3:
   printf("Month no is \"%d\"\t and Days are 31 days\t month name is : March ",month);
   break;
   case 4:
   printf("Month no is \"%d\"\t and Days are 30 days\t Month name is : April ",month);
   break;
   case 5:
```

```
   printf("Month no is \"%d\"\tand Days are 31 days\t Month name is : May ",month);
   break;
   case 6:
   printf("Month no is \"%d\"\t and Days are 30 days\t Month name is : June ",month);
   break;
   case 7:
   printf("Month no is \"%d\"\tand Days are 31 days\t Month name is : July ",month);
   break;
   case 8:
   printf("Month no is \"%d\"\tand Days are 31 days\t Month name is : August ",month);
   break;
   case 9:
   printf("Month no is \"%d\"\tand Days are 30 days\t Month name is : September
",month);
   break;
   case 10:
   printf("Month no is \"%d\"\t and Days are 31 days\t Month name is : October ",month);
   break;
   case 11:
   printf("Month no is \"%d\"\t and Days are 30 days\t Month name is : November
",month);
   break;
   case 12:
   printf("Month no is \"%d\"\tand Days are 31 days\t Month name is : December",month);
   default:
   Printf(" INVALID MONTH INPUT !PLESE ENTER MONTH NO BETWEEN 1-12 ");
```

```
break;
}
   return 0;

}
```

OUTPUT:-

```
Enter Month No: 6
Month no is "6"          and Days are 30 days          Month name is : June
```

9. Create Simple Calculator using switch case.

PROGRAM:-

```
    #include <stdio.h>
#include<math.h>
int main()
{
float num1,num2,a,s,d,m;
char operator;
printf("Enter operator(+,-,/,*): ");
scanf ("%c",&operator);
printf("Enter Number1 : ");
```

```
scanf("%f",&num1);
printf("Enter Number2 : ");
scanf("%f",&num2);

switch(operator){
   case'+':
   a=num1+num2;
   printf("Addition of %g and %g is: %g",num1,num2,a);
    break;
case '-':
   s= num1-num2;
   printf("Substraction of %g and %g is: %g",num1,num2,s);
break;
case '/':
   d=(num1/num2);
   printf("division of %g by %g is: %g",num1,num2,d);
break;
case '*':
   m=(num1*num2);
   printf("multiplication of %g and %g is: %g",num1,num2,m);
break;
default :
printf("invalid input ! please enter correct operator");
}
return 0;
```

}

Output:-

Enter operator(+,-,/,*): -

Enter Number1 : 5

Enter Number2 : 3

Substraction of 5 and 3 is: 2

10. Prompts the user to enter grade. Your program should display the corresponding meaning of grade as per the following table (Using Switch Case)

Grade Meaning
A Excellent
B Good
C Average
D Deficient
F Failing

Program:-

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

```
int main()
{
   char g;
   printf("Please Enter Grade : ");
   scanf("%c",&g);
   switch (g)
   {
      case 'a':
      case 'A':
      printf("Excellent");
      break;
      case 'b':
      case 'B':
      printf("Good");
       break;
      case 'c':
      case 'C':
      printf("Average");
       break;
      case 'd':
      case 'D':
      printf("Deficient");
      break;
      case 'f':
```

```
        case 'F':
        printf(" Falling");
         break;
        default :
        printf(" Entry Wrong Grade!!!");
    }
    return 0;
}
```

Output:-

```
    Please Enter Grade : A
            Excellent
```

OPTIONAL

11. Check whether a triangle is Equilateral, Isosceles or Scalene.

Program:-

```
#include <stdio.h>
int main() {
   float a ,b,c;
   printf("Enter 1st side of triangle : ");
   scanf("%f",&a);
   printf("Enter 2nd side of triangle : ");
   scanf("%f",&b);
   printf("Enter 3rd side of triangle : ");
   scanf("%f",&c);
   if((a==b)&&(a==c))
   {
      printf("Triangle is Equilateral.");
         }
         else if((a==b)||(b==c)||(a==c))
         {
            printf("Triangle is Isosceles or Scalene.");
         }
   else {
      printf("Enter values only for equlateral or isosceles checking .");
   }
   return 0;
}
```

Output:-

```
Enter 1st side of triangle : 4
```

Enter 2nd side of triangle : 4

Enter 3rd side of triangle : 4

Triangle is Equilateral.

12. Check Whether a Number is Even or Odd ?

Program:-

```
#include <stdio.h>
 int main() {
   int no;
   printf("Enter a Number: ");
   scanf("%d",&no);
   if(no%2==0){
      printf("The entered no %d is Even.",no);
   }
   else{
      printf("The entered no %d is Odd.",no);
   }
      return 0;
}
```

Output:-

Enter a Number: 6
The entered no 6 is Even.

13. Check Whether a Character is an Alphabet or not ?

Program:-

```
#include <stdio.h>
int main() {
   char ch;
   printf("Enter any character: ");
   scanf("%c",&ch);
   if((ch >= 97 && ch <= 122) || (ch >= 65 && ch <= 90))

   printf("The character \'%c\' is an alphabet.",ch);
   else
  printf("The character \'%c\' is not an alphabet.",ch);
      return 0;
}
```

Output:-

```
Enter any character: 3
The character '3' is not an alphabet.
```

14. Find the Largest Number Among Three Numbers ?

Program:-

```
#include <stdio.h>

int main() {

  float a,b,c;

  printf("enter 1st no: ");

  scanf("%f",&a);

 printf("enter 2nd no: ");

 scanf("%f",&b);

 printf("enter 3rd no: ");

 scanf("%f",&c);
```

```
 if (a>b)
 if (a>c)
printf("%g is largest no.",a) ;
else
printf("%g is largest no.",c);
else if (b>c)
printf("%g is largest no.",b);
else
printf("%g is largest no.",c);
return 0;
}
```

Output:-

```
enter 1st no: 6
enter 2nd no: 5
enter 3rd no: 2
6 is largest no.
```

15. find the larger from two given integers. However, if the two integers have the

same remainder when divided by 5, then the return the smaller integer. If the two integers are the same, return 0 ?

Program:-

```
#include <stdio.h>

int main() {

   int x,y,a,b;

   printf("Enter Firtst Integer: ");

   scanf("%d",&a);

     printf("Enter Second Integer: ");

     scanf("%d",&b);

     x=a%5;

     y=b%5;

     if (a==b)

     return 0;

     if(x==y&&a<b)

     printf("%d is the smallest integer.",a);

     else

     printf("%d is the smallest integer.",b);


}
```

16. Find the eligibility of admission for a professional course based on the following criteria: Eligibility Criteria : Marks in Maths >=65 and Marks in Phy >=55 and Marks in Chem>=50 and Total in all three subject >=190 or Total in Maths and Physics >=140.

PROGRAM:-

```
#include<stdio.h>
int main()
{
   int m,p,c,t3,tmp;
   printf("Enter marks of Mathematics : ");
   scanf("%d",&m);
    printf("Enter marks of Physics : ");
     scanf("%d",&p);
     printf("Enter marks of Chemistry : ");
      scanf("%d",&c);
      t3=m+p+c;
      tmp=m+p;
      if((m>=65&&p>=55&&c>=50)&&(t3>=190||tmp>=140))
      printf("Congrats...YOU ARE ELIGIBLE FOR ADMISSION.");
          else
printf("YOU ARE NOT ELIGIBLE FOR ADMISSION.");
   return 0;
}
```

OUTPUT:-

```
Enter marks of Mathematics : 70
Enter marks of Physics : 70
Enter marks of Chemistry : 49
YOU ARE NOT ELIGIBLE FOR ADMISSION.
```

OR

Calculate the monthly telephone bills as per the following rule:

Minimum Rs. 200 for up to 100 calls.
Plus Rs. 0.60 per call for next 50 calls.
Plus Rs. 0.50 per call for next 50 calls.
Plus Rs. 0.40 per call for any call beyond 200 calls.

Program:-

```
#include <stdio.h>
int main()
{
   int c;
   float b;
   printf("Enter no of Calls: ");
   scanf("%d", &c);
    if (c<=100)
    {
    b=200;
    printf("your total bill of call %d is %0.2f",c,b);
    }
    else if(c>=100&&c<150)
    {
    b=200+ ((c-100)*0.60);
    printf("your total bill of call %d is %0.2f",c,b);
    }
    else if(c>=150&&c<200)
    {
```

```
    b=200+ ((c-100)*0.60)+((c-150)*0.50);
    printf("your total bill of call %d is %0.2f",c,b);
    }
    else if(c>=200)
    {
    b=200+ ((c-100)*0.60)+((c-150)*0.50)+((c-200)*0.40);
      printf("your total bill of call %d is %0.2f",c,b);
    }
   return 0;
}
```

Output:-

Enter no of Calls: 151

your total bill of call 151 is 231.10

17. Read temperature in centigrade and display a suitable message according to temperature state below :

Temp < 0 then Freezing weather
Temp 0-10 then Very Cold weather
Temp 10-20 then Cold weather
Temp 20-30 then Normal in Temp
Temp 30-40 then Its Hot
Temp >=40 then Its Very Hot

PROGRAM:-

```
#include<stdio.h>
int main()
{
   float temp;
   printf("Enter Temprature: ");
   scanf("%f",&temp);
   if (temp<0)
    printf("\"FREEZING WEATHER\"");
       else if (temp>0&&temp<10)
       printf("\"VERY COLD WEATHER\"");
      else if (temp>10&&temp<20)
      printf("\"COLD WEATHER\"");
       else if (temp>20&&temp<30)
       printf("\"NORMAL IN TEMP\"");
             else if (temp>30&&temp<40)
       printf("\"ITS HOT\"");
       if (temp>=40)
       printf("\"VERY HOT\"");
   return 0;
}
```

Output:-

```
Enter Temprature: 39.5
"ITS HOT"
```

18. check whether a number is positive, negative or zero using switch case.

Program:-

```
#include <stdio.h>


int main() {
   int no;
   printf("ENTER A NO : ");
   scanf("%d",&no);
   switch (no>0)
   {
      case 1:
     printf(" NO \'%d\' is POSITIVE",no);
      break;
   case 0:
   switch (no<0)
   {
      case 1 :
      printf (" NO \'%d\' is a NEGETIVE ",no);
     break;
     case 0 :
      printf(" NO \'%d\' is ZERO",no);
      break;
   }
```

```
    }
    return 0;
}
```

Output:-

```
ENTER A NO : 0
 NO '0' is ZERO
```

19. print day of week name using switch case.

Program:-

```
#include <stdio.h>
int main()
{
    int week;
    printf("Enter week number: ");
    scanf("%d", &week);
       switch(week)
    {
       case 1:
          printf("Week no %d is Monday.",week);
          break;
       case 2:
          printf("Week no %d is Tuesday.",week);
          break;
```

```
        case 3:
            printf("Week no %d is Wednesday.",week);
            break;
        case 4:
            printf("Week no %d is Thursday.",week);
            break;
        case 5:
            printf("Week no %d is Friday.",week);
            break;
        case 6:
            printf("Week no %d is Saturday.",week);
            break;
        case 7:
            printf("Week no %d is Sunday.",week);
            break;
        default:
            printf("Invalid input! Please enter week number between 1 to 7.");
    }
    return 0;
}
```

Output:-

```
Enter week number: 5
Week no 5 is Friday.
```

20. find roots of a quadratic equation using switch case.

Program:-

```
int main()
{
   int a,b,c,d,x1,x2;
   printf("value of a : ");
   scanf("%d", &a);
     printf("value of b : ");
     scanf("%d", &b);
       printf("value of c : ");
       scanf("%d", &c);
       d= b*b- 4*a*c;
       x1=(-b+sqrt(d))/2*a;
       x2=(-b-sqrt(d))/2*a;
       switch(d>0)
   {
        case 1:
       printf("There are two roots x1: %d and x2:%d ",x1,x2);
       break;
       case 0:
       switch (d<0){
       case 1:
       printf("two roots x1: %d and x2: %d are Imaginary.",x1,x2);
       break ;
       case 0:
```

```
        printf("two roots x1: %d and x2: %d are Equal.",x1,x2);
        break;
           }}
    return 0;
}
```

Output:-

```
value of a : 6
value of b : -12
value of c : 6
two roots x1: 36 and x2: 36 are Equal.
```