

## Answer of Assignment 4– 29.12.2020

**SUBJECT-PROGRAMMING AND DATA STRUCTURE USING C (PDSC)**

**LECTURE-M. Thangavel**

**STUDENT:-TANMOY PRAMANICK**

**E-MAIL:-pramanickt15@gmail.com**

**Q1)CHECK WHETHER A CHARACTER IS A VOWEL OR A CONSONANT?**

**Ans:-**

```
#include <stdio.h>

void main()
{
    char v;

    printf("enter the value of v:");

    scanf("%c",&v);

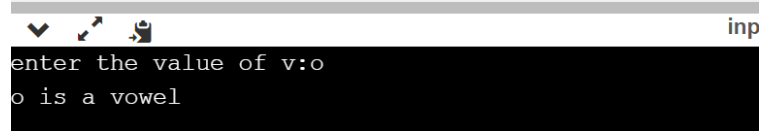
    if(v=='a' || v=='e' || v=='i' || v=='o' || v=='u')
    {
        printf("%c is a vowel",v);
    }

    else
    {
        printf("%c is consonant",v);
    }
}
```

```
}  
  
return 0;  
  
}
```

## OUTPUT

```
8  
9  #include <stdio.h>  
10 void main()  
11 {  
12  char v;  
13  printf("enter the value of v:");  
14  scanf("%c",&v);  
15  if(v=='a' || v=='e' || v=='i' || v=='o' || v=='u')  
16  {  
17  printf("%c is a vowel",v);  
18  }  
19  else  
20  {  
21  printf("%c is consonant",v);  
22  }  
23  return 0;  
24  }  
25
```



inp  
enter the value of v:o  
o is a vowel

## **Q2)FIND ROOTS OF A QUADRATIC EQUATION(USING ELSE IF LADDER)?**

**Ans:-**

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

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

```
int main()
```

```
{
```

```
    int a,b,c;
```

```
    float x1,x2,d;
```

```
    printf("enter the number a,b and c:");
```

```
scanf("%d%d%d",&a,&b,&c);  
  
d=(b*b)-(4*a*c);  
  
if(d>0)  
{  
    x1=(-b+sqrt(d))/2*a;  
    x2=(-b-sqrt(d))/2*a;  
    printf("real root x1=%f and x2=%f",x1,x2);  
}  
  
else if(d==0)  
{  
    x1=x2=-b/2*a;  
    printf("real root x1=%f and x2=%f",x1,x2);  
}  
  
else if(d<0)  
{  
    x1=(-b+sqrt(-d))/2*a;  
    x2=(-b-sqrt(-d))/2*a;  
    printf("complex rootx1=%f and x2=%f",x1,x2);  
}  
  
return 0;  
}
```

## OUTPUT:-

```
enter the number a,b and c:1
-2
1
real root x1=1 and x2=1
```

## Q3)CHECK LEAP YEAR(USING IF ELSE)?

**Ans:-**

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

```
int main()
```

```
{
```

```
    int year;
```

```
    printf("enter year:");
```

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

```
    if((year%400==0) || (year%4==0)&&(year%100!=0))
```

```
        printf("%d is a leap year",year);
```

```
    else
```

```
        printf("%d is not a leap yaer",year);
```

```
        return 0;
```

```
}
```

## OUTPUT

```
enter year:2016
2016 is a leap year
```

**Q4)CHECK WHICH NUMBER NEAREST TO THE VALUE 100 AMOUNG TWO GIVEN INTEGERS.RETURN 0 IF THE TWO NUMBERS ARE EQUAL.(USING NESTED IF...ELSE)?**

**Ans:-**

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

```
int main()
```

```
{
```

```
int num1,num2,var1,var2;
```

```
printf("enter two numbers:");
```

```
scanf("%d%d",&num1,&num2);
```

```
var1=100-num1;
```

```
var2=100-num2;
```

```
if(var1<=var2){
```

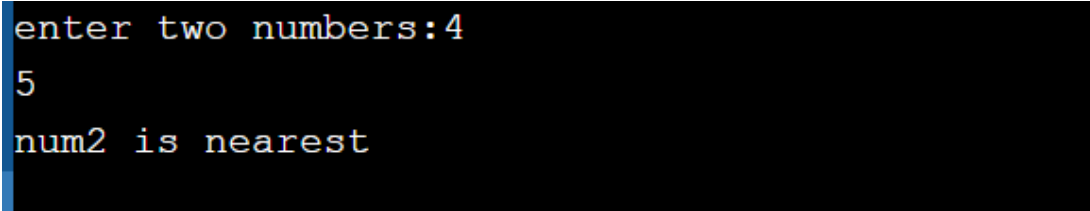
```
    if(var1==var2){
```

```
        printf("return 0");
```

```
    }
```

```
else{  
    printf("num1 is nearest");  
  
}  
  
}  
  
else{  
    printf("num2 is nearest");  
  
}  
  
return 0;  
}
```

**OUTPUT :-**

A terminal window with a black background and light blue text. The text shows the user inputting two numbers, 4 and 5, and the program outputting "num2 is nearest".

```
enter two numbers:4  
5  
num2 is nearest
```

**Q5)CHECK THREE GIVEN INTEGERS(SMALL,MEDIUM AND LARGE)AND RETURN TRUE IF THE DIFFERENCE BETWEEN SMALL AND MIDIMUM AND THE DIFFERENCE BETWEEN MEDIUM AND LARGE IS SAME.(USING NESTED IF ELSE)**

**Ans:-**

```
#include <stdio.h>  
  
int main()  
{  
  
int s,m,l;  
  
printf("enter three no from small to large:");
```

```
scanf("%d%d%d",&s,&m,&l);  
if(s<m&&m<l)  
{  
    if(m-s==l-m)  
    {  
        printf("return true");  
    }  
    else  
    {  
        printf("difference between them is not equal");  
    }  
    return 0;  
}  
}
```

## OUTPUT-

```
8
9  #include <stdio.h>
10 int main()
11 {
12     int s,m,l;
13     printf("enter three no from small to large:");
14     scanf("%d%d%d",&s,&m,&l);
15     if(s<m&&m<l)|
16     {
17         if(m-s==l-m)
18         {
19             printf("return true");
20         }
21         else
22         {
23             printf("difference between them is not equal");
24         }
25     }
26     return 0;
27 }
28
```

input

```
enter three no from small to large:2
5
9
difference between them is not equal
```

**Q6)CALCULATE AND PRINT THE ELECTRICITY BILL OF 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 FOLLOWS:**

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 MINIMUM BILL SHOULD BE OF RS 100/-(USING ELSE IF LADDER)**

**Ans:-**

```
#include <stdio.h>

int main()
{
    char name;

    int id,unit;

    float bill;

    float u1=1.20,u2=1.50,u3=1.80,u4=2.00,sc=0.15;

    printf("enter customer name:");

    scanf("%s",&name);

    printf("enter customer id:");

    scanf("%ld",&id);

    printf("customer consumed unit:");

    scanf("%d",&unit);

    if(unit<=199)
    {
        bill=unit*u1;
    }

    else if(unit>=200&&unit<=400)
    {
        bill=unit*u2;
```

```
}  
else if(unit>=400&&unit<=600)  
{  
    bill=unit*u3;  
}  
else if(unit>=600)  
{  
    bill=unit*u4;  
}  
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

```
main.c:19:10: warning: format '%ld' expects argument of type 'long int *', but argument 2 has type 'int *'
enter customer name:tanmoy
enter customer id:10098
customer consumed unit:233
your unit is 233 and bill is 349.5
```

**Q7)THE MARK OBTAINED BY A STUDENT IN 3 DIFFERENT SUBJECTS ARE INPUT BY USERS.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

Ans:-

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

```
int main()
```

```
{
```

```
int mark1,mark2,mark3,total,avg;
```

```
printf("enter mark1 mark2 mark3:");
```

```
scanf("%d%d%d",&mark1,&mark2,&mark3);
```

```
total=mark1+mark2+mark3;
```

```
printf("total secured mark is:\n",total);
```

```
avg=total/3;
```

```
printf("avg mark is:%d\n",avg);
```

```
if(avg>=90&&avg<=100)
```

```
{
```

```
    printf("secured A grade");
```

```
}
```

```
else if(avg>=80&&avg<=89)
```

```
{
```

```
    printf("secured B grade") ;
```

```
}
```

```
else if(avg>=70&&avg<=79)
```

```
{
```

```
    printf("secured c grade");
```

```
}
```

```
else if(avg>=60&&avg<=69)
```

```
{
```

```
    printf("secured D grade");
```

```
}
```

```
else if(avg>=0&&avg<=59)
```

```
{
```

```
printf("secured F grade");  
  
}  
  
return 0;  
  
}
```

## OUTPUT

```
enter mark1 mark2 mark3:45  
89  
80  
total secured mark is:  
avg mark is:71  
secured c grade
```

## Q8)PRINT TOTAL NUMBER OF DAYS IN A MONTH USING SWITCH CASE?

Ans:-

```
#include <stdio.h>  
  
int main()  
{  
  
    int month;  
  
    printf("Enter Month No: ");  
  
    scanf("%d",&month);  
  
    switch (month)  
    {  
  
        case 1:  
  
            printf("Month no is :%d\nDays:31\nMonth name : January ",month);  
  
            break;  
  
        case 2:
```

```
printf("Month no is: %d\nDays:28 Or 29\nMonth name : February" ,month);
```

```
break;
```

```
case3:
```

```
printf("Month no is :%d\nDays are 31 days\nmonth name : March ",month);
```

```
break;
```

```
case 4:
```

```
printf("Month no is :%d\nDays are 30 days\nMonth name : April ",month);
```

```
break;
```

```
case 5:
```

```
printf("Month no is :%d\nDays31\nMonth name : May ",month);
```

```
break;
```

```
case 6:
```

```
printf("Month no is :%d\nDays:30\nMonth name : June ",month);
```

```
break;
```

```
case 7:
```

```
printf("Month no is :%d\nDays:31\nMonth name : July ",month);
```

```
break;
```

```
case 8:
```

```
printf("Month no is:%d\nDays:31\nMonth nam : August ",month);
```

```
break;
```

```
case 9:
```

```
printf("Month no is :%d\nDays:30\nMonth name: September ",month);
```

```
break;
```

```
case 10:

printf("Month no is: %d\nDays:31\nMonth name : October ",month);

break;

case 11:

printf("Month no is: %d\nDays:30\nMonth name : November ",month);

break;

case 12:

printf("Month no is:%d\nDays:31\nMonth name : December" ,month);

default:

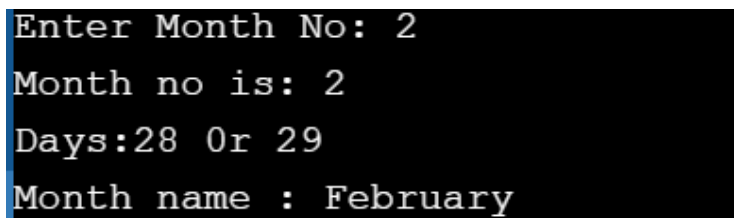
printf("error please input valid month");

}

return 0;

}
```

## OUTPUT



```
Enter Month No: 2
Month no is: 2
Days:28 Or 29
Month name : February
```

## Q9)SIMPLE CALCULATOR USING SWITCH CASE?

**Ans:-**

```
#include <stdio.h>

#include<math.h>

int main()

{

int num1,num2,add,sub,div,mul;

char operator;

printf("Enter operator:");

scanf ("%c",&operator);

printf("Enter Number1 : ");

scanf("%d",&num1);

printf("Enter Number2 : ");

scanf("%d",&num2);

switch(operator){

case'+':

    add=num1+num2;

    printf("Addition of%dand%d is:%d",num1,num2,add);

    break;

case '-':

    sub= num1-num2;

    printf("Substraction of%dand%d is:%d",num1,num2,sub);

    break;
```



```
case '/':  
    div=(num1/num2);  
    printf("division of%dand%d is:%d",num1,num2,div);  
break;  
case '*':  
    mul=(num1*num2);  
    printf("multiplication of%dand%d is:%d",num1,num2,mul);  
break;  
default :  
    printf("invalid! please input valid operator");  
}  
return 0;  
}
```

## OUTPUT

```
Enter operator:+  
Enter Number1 : 1  
Enter Number2 : 2  
Addition ofland2 is:3
```

**Q10)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

**Ans:-**

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

```
int main()
```

```
{
```

```
    char grade;
```

```
    printf("Please Enter Grade : ");
```

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

```
    switch (grade)
```

```
    {
```

```
        case 'A':
```

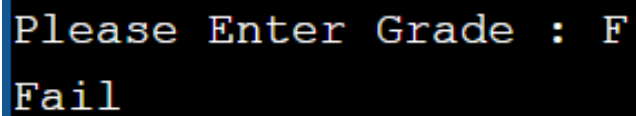
```
            printf("Excellent");
```

```
            break;
```

```
        case 'B':
```

```
    printf("Good");  
  
    break;  
  
    case 'C':  
  
        printf("Average");  
  
        break;  
  
    case 'D':  
  
        printf("Deficient");  
  
        break;  
  
    case 'F':  
  
        printf("Fail");  
  
        break;  
  
}  
  
return 0;  
  
}
```

## OUTPUT

A terminal window with a black background and a blue vertical bar on the left. The text "Please Enter Grade : F" is displayed on the first line, and "Fail" is displayed on the second line.

```
Please Enter Grade : F  
Fail
```