

Chapter-03

Question No-3.2:write a program that reads a floating-point number and then displays right-most digit of the integral part of the number.

Solution

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

void main()
{
    int a,e;
    float p;
    clrscr();
    printf("Enter the value of p\n");
    scanf("%f",&p);
    a=int(p);
    printf("%d\n",a);
    e=a%10;
    if(a>10)
        printf("%d\n",e);
    getch();
}
```

Question No.3.1: Given the values of the variables X,Y and Z write a program to rotate their values such that X has the value of Y,Y has the value of Z and Z has the value of X.

Solution

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

void main()
{
    int x,y,z,temp;
    clrscr();
    printf("Enter the value of x,y,z\n");
    scanf("%d %d %d",&x,&y,&z);
    temp=x;
    x=y;
    y=z;
    z=temp;
}
```

```
printf("%d\t%d\t%d\n",x,y,z);  
getch();  
}
```

Question No-3.3. Modify the above program to display to right-most digits of the integral part of the number.

Solution

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

void main()
{
    int a,e;

    clrscr();

    printf("Enter the value of a\n");
    scanf("%d",&a);
    e=a%100;
    if(a>100)
    printf("%d\n%d\n",a,e);
    getch();
}
```

Question No-3.4: Write a program that will obtain the length and width of a rectangle from the user and compute its area and perimeter.

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int length,width;

    clrscr();

    float area,perimeter;

    printf("Enter the value of length,width\n");
    scanf("%d",&length,&width);
    area=(length*width);
    perimeter=2*(length+width);
    printf("%f",&area,&perimeter);

    getch();
}
```

Question No-3.5: Given an integer number, write a program that displays the number as follows:

| | | | | | | |
|--------|---------|-------|------------------|--------|-----------|--------|
| First | | line: | | all | | digits |
| Second | line: | | all | except | first | digit |
| Third | line: | all | except | first | two | digits |
| | | | | | | |
| Last | line: | | The | | last | digit |
| For | example | the | number 5678 will | be | displayed | as: |
| 5 | | 6 | | 7 | | 8 |
| 6 | | | 7 | | | 8 |
| 8 | | | | | | |

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,c,e,x;
    float p;
    clrscr();
    printf("Enter the value of p\n");
    scanf("%f",&p);
    a=int(p);
    printf("%d\n",a);
    e=a%10000;
    b=e%1000;
    c=b%100;

    x=c%10;

    if(a>10000)
        printf("%d\n%d\n%d\n%d\n%d\n",a,e,b,c,x);
    else if(a>1000)
        printf("%d\n%d\n%d\n",a,b,c,x);
    else if(a>100)
        printf("%d\n%d\n",a,c,x);
    else if(a>10)
        printf("%d\n",a,x);

    getch();
}
```

Question No-3.6:The straight-line method of computing the yearly depreciation of the value of an item is given by

Depreciation=

Write a program to determine the salvage value of an item when the purchase

price , years of service, and the annual depreciation are given.

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int years;
    float s, d,p;
    clrscr();
    printf("Enter the value of years,d,p\n");
    scanf("%d %f %f",&years,&d,&p);
    s=p-(years*d);
    printf("%f",s);
    getch();
}
```

**Question No-3.7: Write the program that will read a real number from the keyboard and print the following output in one line:
Smallest integer The given Largest integer
not less than number not greater than
the number the number**

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    float m;
    int n,p;
    clrscr();
    printf("Enter the value of m\n");
    scanf("%f",&m);
    n=(m/1)+1;
    p=m;
    printf("%d %f %d",n,m,p);
    getch();
}
```

Question No-3.8: The total distance travelled by a vehicle in t seconds is given by
Distance= $ut + \frac{at^2}{2}$

Where u is the initial velocity(meter per second),a is the acceleration (meter per second²). Write a program to evaluate the distance travelled at intervals of time, give the value of u and a. the program should provide the flexibility to the user to select his own time intervals and repeat the calculation for

different value of u and a.

Solution

```
#include<conio.h>
void main()
{
    int a,u,t;
    float distance;
    clrscr();
    printf("Enter the value of a,u,t\n");
    scanf("%d %d %d",&a,&u,&t);
    distance=u*t+(a*t*t)/2;
    printf("%f",distance);
    getch();
}
```

Question No-3.9: In inventory management ,the Economic Order Quantity for a single item is given by
 $EOQ = \sqrt{\frac{2 \times \text{demand rate} \times \text{setup rate}}{\text{holding cost per item per unit time}}}$

And the Time Between Orders
 $TBO = \sqrt{\frac{2 \times \text{setup cost}}{\text{demand rate} \times \text{holding cost per item per unit time}}}$

Solution 1:

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    float EOQ,d,s,h,x;
    Clrscr();
    printf("Enter the value of d,s,h\n");
    scanf("%f %f %f",&d,&s,&h);
    x=(2*d*s)/h;
    EOQ=sqrt(x);
    printf("%f",EOQ);
    getch();
}
```

Question

No 2:

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    float EOQ,d,s,h,x;
    Clrscr();
    printf("Enter the value of d,s,h\n");
    scanf("%f %f %f",&d,&s,&h);
    x=(2*d*s)/h;
    EOQ=sqrt(x);
    printf("%f",EOQ);
    getch();
}
```

```

{
float
x,s,d,h,TOB;
clrscr();
printf("Enter the value of s,d,h\n");
scanf("%f%f%f",&s,&d,&h);
x=(2*s)/(d*h);
TOB=sqrt(x);
printf("%f",TOB);
getch();
}

```

Question No-3.10: For a certain electrical circuit with an inductance L and resistance R, the damped natural frequency is given by $\text{Frequency} = \sqrt{\left\{ \left(\frac{1}{L \cdot C} \right) - \left(\frac{R \cdot R}{4 \cdot C \cdot C} \right) \right\}}$

It is desired to study the variation of this frequency with C (capacitance). Write a program to calculate the frequency for different values of C starting from 0.01 to 0.1 in steps of 0.01.

Solution

```

#include<stdio.h>
#include<conio.h>
#include<math.h>
void
main()
{
float
L,R,C,x,a,b,F;
clrscr();
printf("Enter the value of L,R,C\n");
scanf("%f %f %f",&L,&R,&C);
a={
(1/L*C) - (R*R/4*C*C)
};
F=sqrt(a);
Printf("%f",F);
getch();
}

```

Question No-3.11: Write program to read a four digit integer and print the sum of its digit. Hints: Use / and % operators.

Solution

```

#include<stdio.h>
#include<conio.h>
void
main()
{
int
num,a,b,c,d,x,y,result;
clrscr();

```

```

printf("Enter a number");
scanf("%d",&num);
a=num%10;
x=num/10;
b=x%10;
y=x/10;
c=y%10;
d=y/10;
result=a+b+c+d;
printf("%d",result);
getch();
}

```

Question No-3.12: Write a program to print the size of various data types in C.

Solution

```

#include<stdio.h>
#include<conio.h>
void main()
{
int m;
clrscr();
m=sizeof(10);
printf("Size=%d",m);
getch();
}

```

Question No-3.13: Given three values, write a program to read three values from keyboard and print out the largest of them without using if statement.

Solution

```

#include<stdio.h>
#include<conio.h>
void main()
{
int x,y,z,a,b;
printf("Enter the value of x,y,z\n");
scanf("%d%d%d",&x,&y,&z);
printf("largest\n");
a=(x>y)?x:y
b=(a>z)?a:z
printf("%d",b);
}

```

Question No-3.14: Write a program to read two integer values m and n and to

decide and print whether m is multiple of n.

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int m,n;
    printf("Enter m & n,m>=n:");
    scanf("%d %d",&m,&n);
    if(m%n==0)
        printf("m is a multiple of n");
    else
        printf("m is not a multiple of n");
    getch();
}
```

Question No-3.15: Write a program to read three values using scanf statement and print the following results:

- (a)Sum of the three values**
- (b) Average of the three values**
- (c) Largest of the three**
- (d) Smallest of the three.**

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,c,x,y;
    float sum, average;

    clrscr();
    printf("Enter the value of a,b,c\n");
    scanf("%d%d%d",&a,&b,&c);
    sum=(a+b+c);
    printf("sum=%f\n",sum);
    {
        average=sum/3;
        printf("average=%f\n",average);
    }
    {
        printf("Largest\n");
        x=(a>b)?a:b;
```



```

        y=(x>c)?x:c;
        printf("%d\n",y);
    }
    {
        printf("Smallest\n");
        x=(a<b)?a:b;
        y=(x<c)?x:c;
        printf("%d\n",y);
    }
    getch();
}

```

Question No-3.16: The cost of one type of mobile service is Rs.250 plus Rs.1.25 for each call made over and above 100 calls. Write a program to read customer codes and calls made and print the bill for each customer.

Solution

```

#include<stdio.h>
#include<conio.h>

void main()
{
    int code,call;
    float bill;
    clrscr();
    printf("Enter customer code and number of calls made:");
    scanf("%d %d",&code,&call);
    bill=250+(call*1.25);
    printf("Bill=%f",bill);
    getch();
}

```

Question No-3.17: Write a program to print a table of sin and cos functions for the interval 0 180 degrees in increments of 15 as shown below.

```

-----
x(degees)          sin(x)          cos(x)
0                  .....          .....
15                  .....          .....
.....              .....          .....

```

Solution

```

#include<stdio.h>
#include<conio.h>
#include<math.h>
#define

```

```

#define MAX 180
void main()
{
    int i;
    float x,y,z;
    clrscr();
    i=0;
    printf("x(degree)      sin(x)      cos(x)\n");
    while(i<=MAX)
    {
        x=(p1/MAX)*i;
        y=sin(x);
        z=cos(x);
        printf("%d\n      %f\n      %f\n",i,y,z);
        i=i+15;
    }
    getch();
}

```

Question No-3.18: Write a program to compute the values of square-roots and squares of the number 0 to 100 in steps 10 print the output in a tabular form as shown below.-----

| number | Square-root | square |
|--------|-------------|--------|
| 0 | 0 | 0 |
| 100 | 10 | 10000 |

Solution

```

#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    /*.....square      root      and      square      of      numbers      0      to      100.....*/
    int i,y;
    float x;
    clrscr();
    printf("Number\tSquare      root\tSquare\n\n");
    for(i=0;i<=100;i++)
    {
        x=sqrt(i);
    }
}

```

```
y=i*i;
printf("%d\t%f\t%d\n",i,x,y);
}
getch();
}
```

Question No-3.20: Write a program to illustrate the use of cast operator in a real life situation.

Solution

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

void main()
{
float sum;
int n;

clrscr();
sum=0;
for(n=1;n<=10;++n)
{
sum=sum+1/(float)n;
printf("%2d\t\t\t\t\t%6.4f\n",n,sum);
}

getch();
}
```

Question No-3.19: Write a program that determines whether a given integer is odd or even and displays the number and description on the same line.

Solution

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int x;
    clrscr();
    printf("Enter the integer number:");
    scanf("%d",&x);
    if(x%2==0)
        printf("The number %d is even",x);
    else
        printf("The number %d is odd",x);
}
```

```
getch();  
}
```