**C Programming and Data Structures**

**Computer Science and Technology-B**

**Week 3**

**3(a) Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line.**

#include<stdio.h>

void main()

{

int x1,y1,x2,y2,x3,y3,a;

printf("Enter x1 and y1 values ");

scanf("%d%d",&x1,&y1);

printf("Enter x2 and y2 values ");

scanf("%d%d",&x2,&y2);

printf("Enter x3 and y3 values ");

scanf("%d%d",&x3,&y3);

a=(x1\*(y2-y3)+x2\*(y3-y1)+x3\*(y1-y2));

if(a==0)

{

printf("Three points fall on same line");

}

else

{

printf("Three points dos not lie on same line");

}

}

**Output:** Enter x1 and y1 values 2

4

Enter x2 and y2 values 4

6

Enter x3 and y3 values 6

8

Three points fall on same line

**3(b) The digital root (also called repeated digital sum) of a number is a single digit value obtained by an iterative process of summing digits. Digital sum of 65536 is 7, because 6+5+5+3+6=25 and 2+5=7. Write a program that takes an integer as input and prints its digital root.**

#include<stdio.h>

void main()

{

int n,sum=0;

printf("Enter value ");

scanf("%d",&n);

while(n>0 || sum>9)

{

if (n==0)

{

n=sum;

sum=0;

}

sum=sum+(n%10);

n/=10;

}

printf("%d",sum);

}

**Method II**

#include<stdio.h>

void main()

{

int n,r,sum=0;

printf("Enter a number ");

scanf("%d",&n);

while(n>0)

{

for(sum=0;n>0;n=n/10)

{

r=n%10;

sum=sum+r;

}

if(sum>=10)

{

n=sum;

}

else

{

printf("The digital root is %d",sum);

}

}

}

**Output:**Enter a number 65536

The digital root is 7