

## Assignment -4 Roll no-20BCS142

### Question no.1

```
#include<stdio.h>

#include<stdlib.h>

#include<math.h>

struct points{

    int x;

    int y;

    struct points *next;

};

int main() {

    struct points *s,*tmp,*n;

    s=(struct points *)malloc(sizeof(struct points));

    s->x=2,s->y=6,s->next=NULL;

    tmp=s;

    int j=2;

    /*for(int i=2;i<=10;i++){

        n=(struct points *)malloc(sizeof(struct points));

        n->x=i+1;

        n->y=i*j;

        n->next=NULL;

        tmp->next=n;
```

```

    tmp=n;

    j++;
} */

n=(struct points *)malloc(sizeof(struct points));

n->x=6,n->y=9,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=4,n->y=12,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=6,n->y=18,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=7,n->y=14,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=8,n->y=16,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=9,n->y=27,n->next=NULL,tmp->next=n;tmp=tmp->next;

n=(struct points *)malloc(sizeof(struct points));

n->x=10,n->y=30,n->next=NULL,tmp->next=n;tmp=tmp->next;

struct points *ptr;

ptr=s;

while(ptr->next!=NULL){

    float X=(ptr->x -ptr->next->x);

    float Y=(ptr->y -ptr->next->y);

```

```

float sum=sqrt(X*X + Y*Y);

printf("the distance between (%d,%d) and (%d,%d) is %.2f\n",ptr->x,ptr->y,ptr-
>next->x,ptr->next->y,sum);

ptr=ptr->next;

}

free (s);

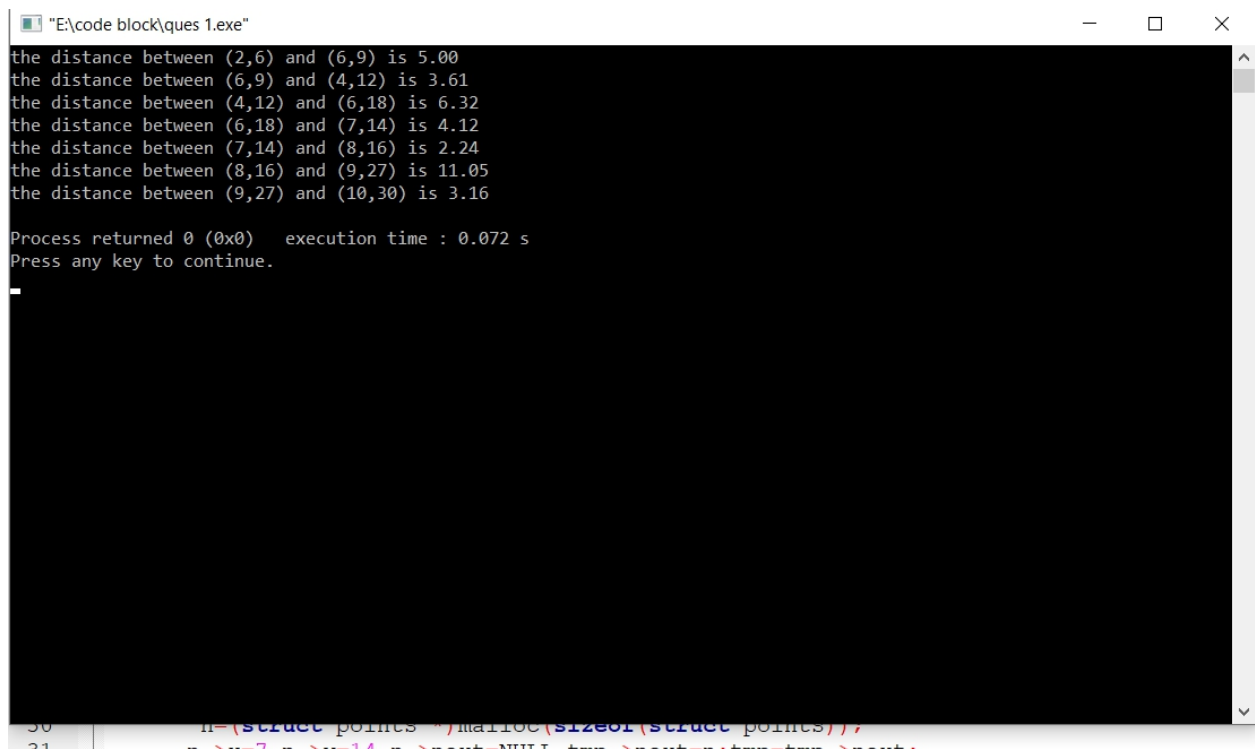
free (n);

return 0;

}

```

### Output of 1st



```

"E:\code block\ques 1.exe"
the distance between (2,6) and (6,9) is 5.00
the distance between (6,9) and (4,12) is 3.61
the distance between (4,12) and (6,18) is 6.32
the distance between (6,18) and (7,14) is 4.12
the distance between (7,14) and (8,16) is 2.24
the distance between (8,16) and (9,27) is 11.05
the distance between (9,27) and (10,30) is 3.16

Process returned 0 (0x0)   execution time : 0.072 s
Press any key to continue.

```

## Question 2<sup>nd</sup>

```
#include<stdio.h>

#include<stdlib.h>

struct digit{

int x;

struct digit *next;

};

void Swap(int *x,int *y){

    int t=*x;

    *x=*y;

    *y=t;

}

void permutation(int arr[],int l,int r){

    if(l==r){

        for(int i=0;i<4;i++)

            printf("%d",arr[i]);

        printf("\n");

    }

    else{

        for(int i=l;i<=r;i++){

            Swap(&arr[i],&arr[l]);

            permutation(arr,l+1,r) ;

        }

    }

}
```

```

        Swap(&arr[i],&arr[l]);

    }

}

}

int main() {

    struct digit *N,*p;

    int n,sum=0;

    printf("Enter 4 digit number");

    scanf("%d",&n);

    int arr[5]={0},i=0;

    N=(struct digit *)malloc(sizeof(struct digit));

    N->x=n%10,arr[i++]=n%10;

    N->next=NULL;

    n=n/10;

    while(n){

        p=(struct digit *)malloc(sizeof(struct digit));

        p->x=n%10,arr[i++]=n%10;

        p->next=N;//As we have to store the address

        N=p; //such that 1000th digit ->100th digit and

        n=n/10; //100th digit ->10th digit

    }

```

```

    permutation(arr,0,3);

while(p!=NULL){

    sum+=((p->x )* (p->x));

    p=p->next;

}

printf("sum of Square of digit in the no. is %d",sum);

free(N);

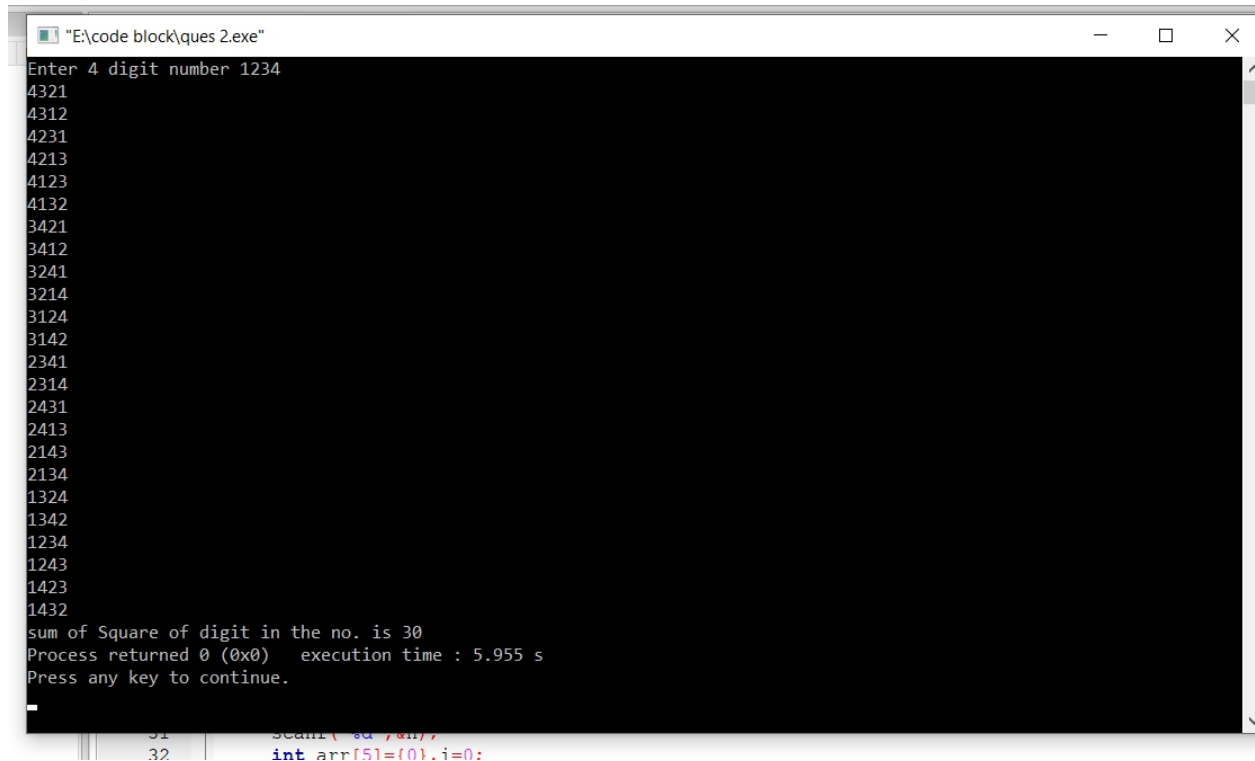
free(p);

return 0;

}

```

## Output of 2nd



```

E:\code block\ques 2.exe
Enter 4 digit number 1234
4321
4312
4231
4213
4123
4132
3421
3412
3241
3214
3124
3142
2341
2314
2431
2413
2143
2134
1324
1342
1234
1243
1423
1432
sum of Square of digit in the no. is 30
Process returned 0 (0x0)   execution time : 5.955 s
Press any key to continue.

```