OOP LABORATORY 1

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ROLL : 2005643

Q1. **PROGRAM CODE:-**

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

struct student
{
  char name[50];
  int roll, marks[5];
};

int main()
{
   int i;
   struct student S1;
   printf ("Enter Name :-\n");
   fgets(S1.name, sizeof(S1.name), stdin);

   printf("Enter roll number\n");
   scanf("%d", &S1.roll);

   printf("Enter marks for 5 subjects\n\n");
   for(i=0;i<5;i++)
   scanf("%d", &S1.marks[i]);

   printf ("\nDetails Entered :- \nName :  %s\nRoll Number : %d\n", S1.name, S1.roll);
   for(i=0;i<5;i++)
   printf("Marks are %d \n", S1.marks[i]);

   return 0;
}
```

OUTPUT:-

```
Enter Name :-
Anirban
Enter roll number
2005643
Enter marks for 5 subjects

80
79
68
88
92

Details Entered :-
Name :  Anirban

Roll Number : 2005643
Marks are 80
Marks are 79
Marks are 68
Marks are 88
Marks are 92
```

Q2. **PROGRAM CODE:-**

```
#include <stdio.h>
struct student
{
  int roll;
  char name[40];
  int marks[5];
  int total_m;
  int per;

};
int all_std(struct student* std,int n);
void swap(int *xp, int *yp)
{
    int temp = *xp;
    *xp = *yp;
    *yp = temp;
}


int roll(int roll_temp,struct student* std,int n){
    for(int i = 0;i<n;i++){
        if(roll_temp== std[i].roll){
            printf("Name: %s\n",std[i].name);

            for(int j=0;j<5;j++){
            printf("Marks in Subject %d : %d\n",i+1,std[i].marks[j]);
        }
        }
    }
}
int all_std(struct student std[],int n){
    //std[0].total_m=0;
    for(int i = 0;i<n;i++){
        std[i].total_m=0;
        for(int j = 0;j<5;j++){
            std[i].total_m+=std[i].marks[j];
        }
    }

    for(int i=0;i<n;i++){
        // std[i].per=0;
        std[i].per=std[i].total_m/5;
    }

    for(int i=0;i<n;i++){

            printf("\nName : %s \nRoll No. : %d\nTotal Marks: %d\nPercentage : %d %%
\n",std[i].name,std[i].roll,std[i].total_m,std[i].per);
            ///printf("%","\n")
            printf("-----------------------------------------");
        }
    printf("\n");

}
```

```
int range(int l,int r,struct student* std,int n){
   for(int i = 0;i<n;i++){
      if(std[i].per>=l && std[i].per<=r){
         printf("Name: %s\n",std[i].name);
         printf("Percentage: %d %% \n",std[i].per);

         for(int j=0;j<5;j++){
         printf("Marks in Subject %d : %d\n",i+1,std[i].marks[j]);

         }
         printf("-------------------------------------------\n");
      }
   }
}

int sort_m(struct student* std,int n){
   int i, j;
   for (i = 0; i < n-1; i++)

   for (j = 0; j < n-i-1; j++)
      if (std[j].total_m > std[j+1].total_m)
         swap(&std[j].total_m, &std[j+1].total_m);

   for(int i=0;i<n;i++){

         printf("\nName : %s \nRoll No. : %d\nTotal
Marks: %d\n",std[i].name,std[i].roll,std[i].total_m);
         printf("-------------------------------------------\n");
      }
}
int func(){

}

int main()
{

   int n;
   printf("Enter no. of Students: \n");
   scanf("%d",&n);
   struct student st[n];
   for(int i=0;i<n;i++){
      printf("Enter roll number: \n");
      scanf("%d",&st[i].roll);
      printf("Enter name of student: \n");
      scanf("%s",st[i].name);
      printf("Enter marks of the student in 5 subjects: \n");
      for(int j=0;j<5;j++){
         scanf("%d",&st[i].marks[j]);
      }
   }


   int flag=0;
   while(flag==0){
      printf("1. Total Marks & Percentage of all students");
      printf("\n2. Display details for given roll no.");
```

```
        printf("\n3. Display details for marks in range ");
        printf("\n4. Sort for marks");
        printf("\n5. End");
        printf("\nChoose your option:");
        int c;
        scanf("%d",&c);
        if(c==1){
            all_std(st,n);
        }
        else if(c==2){
            int roll_temp;
            scanf("%d",&roll_temp);
            roll(roll_temp,st,n);
        }
        else if(c==3){
            int l,r;
            scanf("%d",&l);
            scanf("%d",&r);
            range(l,r,st,n);
        }
        else if(c==4){
            sort_m(st,n);
        }
        else{
            flag=1;
        }
    }

    return 0;
}
```

OUTPUT:-

```
Enter roll number:
643
Enter name of student:
Nikhil
Enter marks of the student in 5 subjects:
88
79
97
70
90
Enter roll number:
564
Enter name of student:
Dushyant
Enter marks of the student in 5 subjects:
89
98
90
92
76
1. Total Marks & Percentage of all students
2. Display details for given roll no.
3. Display details for marks in range
4. Sort for marks
5. End
Choose your option:1

Name : Nikhil
Roll No. : 643
Total Marks: 424
Percentage : 84 %
-----------------------------------------
```

```
Name : Dushyant
Roll No. : 564
Total Marks: 445
Percentage : 89 %
-----------------------------------------------
1. Total Marks & Percentage of all students
2. Display details for given roll no.
3. Display details for marks in range
4. Sort for marks
5. End
Choose your option:2
643
Name: Nikhil
Marks in Subject 1 : 88
Marks in Subject 1 : 79
Marks in Subject 1 : 97
Marks in Subject 1 : 70
Marks in Subject 1 : 90
1. Total Marks & Percentage of all students
2. Display details for given roll no.
3. Display details for marks in range
4. Sort for marks
5. End
Choose your option:3
88
90
Name: Dushyant
Percentage: 89 %
Marks in Subject 2 : 89
Marks in Subject 2 : 98
Marks in Subject 2 : 90
Marks in Subject 2 : 92
-----------------------------------------------
1. Total Marks & Percentage of all students
2. Display details for given roll no.
3. Display details for marks in range
4. Sort for marks
5. End
Choose your option:4

Name : Nikhil
Roll No. : 643
Total Marks: 424
-----------------------------------------------

Name : Dushyant
Roll No. : 564
Total Marks: 445
-----------------------------------------------
1. Total Marks & Percentage of all students
2. Display details for given roll no.
3. Display details for marks in range
4. Sort for marks
5. End
Choose your option:5


...Program finished with exit code 0
Press ENTER to exit console.
```

Q3. **PROGRAM CODE:-**

```
#include <stdio.h>

struct emp
{
  int id;
  char name[50];
  int age;
  int basic_sal;
  float gross;
};

void display(struct emp *s,int n)
```

```
{
   int i;
   printf("Details Entered :\n ");

   for( i=0;i<n;i++)
   {
      printf("Employee number: %d, ID : %d , Name : %s ,Age : %d ,Basic Sal : %d ,
       Gross Sal : %0.1f \n", i+1, s->id, s->name, s->age , s->basic_sal ,s->gross);
        s++;
   }
}

int main()
{
   int n,i;

   printf( "Enter number of employees : \n");
   scanf("%d", &n);

   struct emp a[n];
   for( i=0;i<n;i++)
   {
      printf("Enter ID, age, basic sal, name of Employee %d : \n", i+1);
      scanf("%d", &a[i].id);
      scanf("%d", &a[i].age);
      scanf("%d", &a[i].basic_sal);
      scanf("%s", &a[i].name);
      a[i].gross = a[i].basic_sal+0.8*a[i].basic_sal+0.1*a[i].basic_sal;
   }

   struct emp *s = a;
   display(s,n);
   return 0;
}
```

OUTPUT:-

```
Enter number of employees :
3
Enter ID, age, basic sal, name of Employee 1 :
101
34
60000
Nikhil
Enter ID, age, basic sal, name of Employee 2 :
105
36
75000
Robin
Enter ID, age, basic sal, name of Employee 3 :
107
39
90000
Dushyant
Details Entered :
 Employee number: 1, ID : 101 , Name : Nikhil ,Age : 34 , Basic Sal : 60000 , Gross Sal : 114000.0
Employee number: 2, ID : 105 , Name : Robin ,Age : 36 , Basic Sal : 75000 , Gross Sal : 142500.0
Employee number: 3, ID : 107 , Name : Dushyant ,Age : 39 , Basic Sal : 90000 , Gross Sal : 171000.0
```