Name - Akriti Choudhary
Roll number - 2005776
Lab1
Subject - OOP lab
Class - B14
Branch - CSE

Question1 - WAP to input name,roll number and marks in 5 subjects for a student , and display it.

```
#include <iostream>
#include <string>
using namespace std;
struct student
{
   string name;
   int roll;
   int marks[5];
};

struct student input(struct student s1){
   cout<<"Enter the name of the student : "<<endl;
   getline(cin,s1.name);

    cout<<"Enter the roll number of the student : "<<endl;
   cin>>s1.roll;

    cout<<"Enter the marks  of the student : "<<endl;
    for(int i = 0 ; i < 5 ; ++i){
       cout<<"Enter the marks of subject"<<i+1<<endl;
       cin>>s1.marks[i];
    }
    return s1;

}
void display(struct student s1){
cout<<"The name of the student : "<<s1.name<<endl;

    cout<<"The roll number of the student : "<<s1.roll<<endl;

    for(int i = 0 ; i < 5 ; ++i){
       cout<<"The marks of subject"<<i+1<<" is : "<<s1.marks[i]<<endl;
    }
}
int main(){
   struct student s1;

   //input the details of the student
   s1 = input(s1);

   //display the details of the student
   display(s1);

   return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\30_7_2021> ./student
Enter the name of the student :
Akriti Choudhary
Enter the roll number of the student :
2005776
Enter the marks  of the student :
Enter the marks of subject1
100
Enter the marks of subject2
90
Enter the marks of subject3
98
Enter the marks of subject4
99
Enter the marks of subject5
97
The name of the student : Akriti Choudhary
The roll number of the student : 2005776
The marks of subject1 is : 100
The marks of subject2 is : 90
The marks of subject3 is : 98
The marks of subject4 is : 99
The marks of subject5 is : 97
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\30_7_2021>
```

Question2 - WAP to input name,roll number and marks in 5 subjects for n number of students .Write functions to :-
a. Find total marks and percentage of all n students
b. Display details of a student with a given roll number
c. Display details for all students having percentage in a given range.
d. Sort the array in ascending order of marks

```
#include <iostream>

using namespace std;

struct student1
{
   char name[20];
   int roll;
   int marks[5];
   int total;
   float percent;
};

struct student1 *input(struct student1 *s)
{
   cout << "Enter name : " << endl;
   cin >> s->name;
   cout << "Enter roll number :" << endl;
   cin >> s->roll;
   for (int i = 0; i < 5; ++i)
   {
      cout << "Enter marks of subject" << i + 1 << " : " << endl;
```

```
      cin >> s->marks[i];
   }
}

void totPer(struct student1 *s)
{
   int sum = 0;
   for (int i = 0; i < 5; ++i)
   {
      sum += s->marks[i];
   }
   s->total = sum;
   s->percent = (sum / 500.0) * 100;
}

void sort(int arrSum[], int size)
{
   int temp;
   for (int i = 0; i < size; ++i)
   {
      for (int j = 0; j < size - 1 - i; ++j)
      {
         if (arrSum[j] < arrSum[j + 1])
         {
            temp = arrSum[j];
            arrSum[j] = arrSum[j + 1];
            arrSum[j + 1] = temp;
         }
      }
   }
}

void display(struct student1 *s)
{
   cout << "name :" << s->name << endl;
   cout << "roll number :" << s->roll << endl;
   for (int i = 0; i < 5; ++i)
   {
      cout << "marks of subject" << i + 1 << " : " << s->marks[i] << endl;
   }
   cout << "Total marks :" << s->total << endl;
   cout << "Percentage :" << s->percent << "%" << endl;
}

void displayRankWise(struct student1 *s)
{

   cout << "name : " << s->name << "   "
        << "Roll number : " << s->roll << "  "
        << "Percentage : " << s->percent << "%" << endl;
}

int main()
{
   int n;
   cout << "Enter number of students" << endl;
   cin >> n;
   struct student1 arr[n];
```

```
int sortSum[n];

for (int i = 0; i < n; ++i)
{
   cout<<endl;
   input(&arr[i]);
   totPer(&arr[i]);
}

//To display the details of the student of a particular roll

int rollNum;

cout << "Enter the roll number of student to display details :" << endl;
cin >> rollNum;
for (int i = 0; i < n; ++i)
{
   if (rollNum == arr[i].roll)
   {
      display(&arr[i]);
   }
}
cout<<endl;
//To display the details of students in a particular range

int perBegin, perEnd;
cout << "Enter the range of percent to display details :" << endl;
cin >> perBegin >> perEnd;
for (int i = 0; i < n; ++i)
{
   if (perBegin < arr[i].percent && perEnd >= arr[i].percent)
   {
      display(&arr[i]);
      cout<<endl;
   }
}

//filling the array sortSum with the total marks of the students

for (int i = 0; i < n; ++i)
{
   sortSum[i] = arr[i].total;
}

//sorting total marks

sort(sortSum, n);

//Displaying the rank of students

cout << "Rank of students according to the total marks :" << endl;

for (int i = 0; i < n; ++i)
{
   cout << "-------------------------------------------------------" << endl;
   cout << "Rank " << i + 1 << " : ";
   for (int j = 0; j < n; ++j)
   {
```

```
        {
            if (sortSum[i] == arr[j].total)
            {
                displayRankWise(&arr[j]);
            }
        }
    }
  }
  cout << "----------------------------------------------------------------" << endl;

  return 0;
}
```

```
Enter number of students
3

Enter name :
Alish
Enter roll number :
2000
Enter marks of subject1 :
100
Enter marks of subject2 :
90
Enter marks of subject3 :
98
Enter marks of subject4 :
97
Enter marks of subject5 :
99

Enter name :
Neha
Enter roll number :
```

```
Enter roll number :
2001
Enter marks of subject1 :
34
Enter marks of subject2 :
56
Enter marks of subject3 :
78
Enter marks of subject4 :
98
Enter marks of subject5 :
76

Enter name :
Tanmay
Enter roll number :
2002
Enter marks of subject1 :
12
Enter marks of subject2 :
34
Enter marks of subject3 :
```

```
Enter marks of subject3 :
56
Enter marks of subject4 :
11
Enter marks of subject5 :
1
Enter the roll number of student to display details :
2002
name :Tanmay
roll number :2002
marks of subject1 : 12
marks of subject2 : 34
marks of subject3 : 56
marks of subject4 : 11
marks of subject5 : 1
Total marks :114
Percentage :22.8%

Enter the range of percent to display details :
90 100
name :Alish
roll number :2000
```

```
name :Alish
roll number :2000
marks of subject1 : 100
marks of subject2 : 90
marks of subject3 : 98
marks of subject4 : 97
marks of subject5 : 99
Total marks :484
Percentage :96.8%

Rank of students according to the total marks :
-------------------------------------------------------------
Rank 1 : name : Alish   Roll number : 2000  Percentage : 96.8%
-------------------------------------------------------------
Rank 2 : name : Neha   Roll number : 2001  Percentage : 68.4%
-------------------------------------------------------------
Rank 3 : name : Tanmay   Roll number : 2002  Percentage : 22.8%
-------------------------------------------------------------
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\30_7_2021>
```

Question3 -WAP to store n employees data such as employee name, id, age, basic salary . Calculate the gross pay of all employees and display it along with all other details in a tabular form,using pointer to structure. employees as follows:
Gross pay=basic pay + HR + DA
HRA=10% of basic, DA=80% of basic

```
#include <iostream>
#include <string>

using namespace std;

struct employee
{
   int id;
   string name;
   int age;
   double basicSal;
   double grossSal;
};

void input(struct employee *s)
{

   cout << "Enter the name of the employee : ";
   cin >> s->name;
   cout << endl;

   cout << "Enter the employee id : ";
   cin >> s->id;
   cout << endl;
```

```
   cout << "Enter the employee age : ";
   cin >> s->age;
   cout << endl;

   cout << "Enter the employee basic salary : ";
   cin >> s->basicSal;
   cout << endl;
}

void calculate(struct employee *s)
{
   double DA , HRA ;
   DA = 0.8 * s->basicSal;
   HRA = 0.1 * s->basicSal;
   s->grossSal = s->basicSal + DA + HRA;
}

void display(struct employee *s){

   cout<< s->name <<" "<< s->id<<" "<< s->age<<" "<< s->basicSal<<" "<<s->grossSal<<endl;
}


int main()
{

   int n;
   cout << "Enter the number of employees : ";
   cin >> n;
   cout << endl;
   struct employee arr[n];
   for (int i = 0; i < n; ++i)
   {
      input(&arr[i]);
      calculate(&arr[i]);
   }
   cout<<"Displaying the details of the employees :"<<endl;

   cout<<"-------------------------------------------------------------------------"<<endl;
   cout<<"Name "<<"ID "<<"Age "<<"Basic Salary "<<"Gross Salary"<<endl;
   for (int i = 0; i < n; ++i)
   {
      display(&arr[i]);
   }
   cout<<"-------------------------------------------------------------------------"<<endl;

}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\30_7_2021> ./employee
Enter the number of employees : 3

Enter the name of the employee : A

Enter the employee id : 2000

Enter the employee age : 23

Enter the employee basic salary : 90000

Enter the name of the employee : B

Enter the employee id : 3000

Enter the employee age : 56

Enter the employee basic salary : 1000000

Enter the name of the employee : C
```

```
Enter the employee basic salary : 1000000

Enter the name of the employee : C

Enter the employee id : 1000

Enter the employee age : 20

Enter the employee basic salary : 120000

Displaying the details of the employees :
------------------------------------------------------------------------
Name ID Age Basic SalaryGross Salary
A 2000 23 90000 171000
B 3000 56 1e+006 1.9e+006
C 1000 20 120000 228000
------------------------------------------------------------------------
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\30_7_2021>
```