LAB ASSIGNMENT 17

1. Develop a C program using array of structures to store information for student management system such as student roll no, student name, Department, Course, CGPA and Year of joining. Perform the following using functions

i. Search and display details of a particular student based on

given roll no.

ii. Display top 5 students based on CGPA obtained.

iii. List out student names for the given department.

```
#include <stdio.h>

#include <string.h>


struct student{

   int roll;

   char name[50];

   char department[25];

   char course[25];

   float cgpa;

   int year_joined;

}stud[100],t;


void display_details(int stu_num, struct student stud[])//if i don't
pass stud[] inside,

                                        //it's not even reading values
```

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```
{
   int num,i,j, flag=0;

   printf("\nEnter roll number of student: ");
   scanf("%d",&num);

   for(i=0;i<stu_num;i++)
   {
      if(stud[i].roll==num)
      {
         flag=1;
         printf("\nThe details of the student are:");
         printf("\nName: "); //i can't use %[^\n]s here
         puts(stud[i].name);
         printf("Roll number: %d",stud[i].roll);
         printf("\nDepartment: ");
         puts(stud[i].department);
         printf("Course: ");
         puts(stud[i].course);//puts() automatically implements \n at
end of string
         printf("CGPA: %f",stud[i].cgpa);
         printf("\nYear joined: %d",stud[i].year_joined);
      }
   }
```

```
    if(!flag)
    {
        printf("\nStudent not found!");
    }
}

void display_top(int stu_num, struct student stud[])
{
    int i,j;

    for(i=0;i<stu_num;i++)
    {
        for(j=0;j<stu_num-1;j++)
        {
            if(stud[j].cgpa<stud[j+1].cgpa)
            {
                t=stud[j];
                stud[j]=stud[j+1];
                stud[j+1]=t;
            }
        }
    }
```

```
    printf("\nTop 5 students are:\n");
    for(i=0;i<5;i++)
    {
        printf("Rank: %d  CGPA: %f  Name: ",i+1, stud[i].cgpa);
        puts(stud[i].name);
    }
}

void list_dep(int stu_num, struct student stud[])
{
    int i, flag;
    char depname[25];

    printf("\nEnter department name: ");
    getchar();
    scanf("%[^\n]s",depname);

    for(i=0;i<stu_num;i++)
    {
        if(strcmp(depname,stud[i].department)==0)
        {
            flag=1;
            puts(stud[i].name);
        }
```

```
    }

    if(!flag)
    printf("\nStudents not found in this department!");

}

int main()
{
    int option,n,i,j;
    struct student stud[100];

    printf("\nEnter number of students whose details you want to
enter: ");
    scanf("%d",&n);

    for(i=0;i<n;i++)
    {
        printf("\nEnter details of student %d: ",i+1);
        printf("\nEnter name: ");
        getchar();//if not used means scanf won't work for strings
involving space characters inside loop
        scanf("%[^\n]s",stud[i].name);
```

```
    printf("\nEnter roll number: ");
    scanf("%d",&stud[i].roll);

    printf("\nEnter name of department: ");
    getchar();
    scanf("%[^\n]s",stud[i].department);

      printf("\nEnter name of course: ");
      getchar();
      scanf("%[^\n]s",stud[i].course);

    printf("\nEnter CGPA obtained: ");
    scanf("%f",&stud[i].cgpa);

    printf("\nEnter year of joining: ");
    scanf("%d",&stud[i].year_joined);

  }

  printf("\nChoose an option:");
  printf("\n1.Display details of a particular student.");
  printf("\n2.Display top 5 students based on CGPA obtained.");
  printf("\n3.List out student names for a particular department.");
  printf("\n\nYour option is: ");
```

```
    scanf("%d",&option);

    switch(option){
        case 1:
          display_details(n, stud);
          break;

        case 2:
          display_top(n,stud);
          break;

        case 3:
          list_dep(n, stud);
          break;

        default:
        printf("\nChoose a correct option!");
        break;
    }

    return 0;
}
```

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2. Create a structure called travel estimator, that holds the member variables like source, destination, fare, type of vehicle (Micro, Mini, Sedan etc…) and the number of travellers using that vehicle. Write a menu driven program that performs the following operations.

i) Calculate the total fare from the source to the final destination.

ii) Calculate the average time taken for the entire journey.

iii) List all the four places in some consecutive order by means of quickest time to reach from the source.

Use the information given in the below table to compute the above given options. The price per/km from the source is Rs.15. The trip starts from Aurangabad and the distance to each of the destinations from the source and the duration is listed below:

Destination	Distance	Trip Duration	Visiting Time
Mini Taj	7 km	20 mins	30 mins
Ghrishneshwar Temple	18 km	60 mins	20 mins
Daulatabad Fort	12 km	40 mins	90 mins
Ellora Caves	25 km	90 mins	180mins

```
#include <stdio.h>

#include <string.h>


struct travel_estimator{
```

```
    int fare;
    int Time;
    char vehicle[25];
    int travellers;
}trip;

int main()
{
    int option;

    printf("Choose your destination: ");
    printf("\nDestination\t\tDistance\tTrip duration\tVisting time");
    printf("\n1.Mini Taj\t\t7km\t\t20min\t\t30min");
    printf("\n2.Daulatabad Fort\t12km\t\t40min\t\t90min");
    printf("\n3.Ghrishneshwar Temple\t18km\t\t60min\t\t20min");
    printf("\n4.Ellora Caves\t\t25km\t\t90min\t\t180min");

    printf("\n\nYour choice is: ");
    scanf("%d",&option);

    printf("\nEnter number of travellers: ");
    scanf("%d",&trip.travellers);
```

```
   printf("\nEnter name of vehicle you want to use from given
options: ");
   printf("\nMicro\tMini\tSedan\tBus");
   scanf("%s",trip.vehicle);

   switch(option){
      case 1:
        trip.fare=15*trip.travellers*7;
        trip.Time=20+30+20;
        break;

      case 2:
         trip.fare=15*trip.travellers*12;
         trip.Time=40+90+40;
        break;

      case 3:
         trip.fare=15*trip.travellers*18;
         trip.Time=60+20+60;
        break;

      case 4:
           trip.fare=15*trip.travellers*25;
           trip.Time=90+180+90;
```

```
        break;

    default:
        printf("\nChoose correct option!");
        break;
  }

  printf("\nYour total fare from Aurangabad to selected destination is Rs%d",trip.fare);
  printf("\nYour vehicle is %s and the number of travellers is %d",trip.vehicle,trip.travellers);
  printf("\nAverage time taken for entire journey (to and back) is %d minutes",trip.Time);

  return 0;
}
```

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