TASK-1:

Given problem:-

A text file will be given containing Student ID, GPA and respected semester. The task is to find the Student ID, got the highest GPA.

Solution approach:-

First, we have to read the file and take input from that. As, we need the Student ID getting highest GPA, our concern will be only two data. At first, it can be assumed that highest GPA is 0. And a variable can be taken to store the highest GPA. Then, while reading the file it should be checked that if given GPA is higher than the stored GPA. If so, then highest GPA value should be updated and that GPA will be stored in highest GPA and the respected Student ID that got that GPA will be stored and so on.

After the reading whole file is done, then the highest GPA value and respected Student ID will be given as output.

Respective Code:-

```
#include <stdio.h>

#include <conio.h>

#include <string.h>

#include <stdlib.h>



int main()

{

   double maxcg=0;

   char ansid[15];

   FILE *flp=fopen("D:/grades.txt", "r");


   if(!flp){
```

```
    printf("ERROR");
}
else{
    char buffer[1024];

    int row=0;
    int column=0;

    while(fgets(buffer, 1024, flp)){
        column=0;
        row++;

        char* value= strtok(buffer, ";");
        while(value){
            char id[15];
            if(column==0){
                strcpy(id, value);
            }
            else if(column==1){
                char *ptr;
                double cg;
                cg=strtod(value, &ptr);
                if(maxcg<cg){
                    maxcg=cg;
                    strcpy(ansid, id);
```

```
            }
        }
            value  = strtok(NULL, ";");
            column++;
      }
   }fclose(flp);
   printf("\n");
   printf("%s got highest, and CG is %llf", ansid, maxcg);
   }
   return 0;
}
```

Explanation:-

At first the file is opened using a file pointer. Then we keep reading the file taking a row as a string. After that we split the string using strtok fuction and take values of student ID and GPA. We then convert the GPA to double data type from string data type. Then GPA value is compared with highest GPA using if-else condition. First column is student ID and second column represents GPA. After comparing we keep changing highest GPA value if it meets the condition.

New findings:

-‘strtok’ function can be used to split a string separated by any special character.

- ‘strtod’ function can be used to convert string type data to double type data.

TASK-2:

Given problem:-

Student ID , GPA and semester should be taken as input and if the inputs are valid then it will be added as a row in a grade.txt text file.

Solution approach:-

First, after taking necessary inputs, we will check if the inputs are valid. If given Student ID exists in StudentInfo.txt file. If so, we will check if given GPA and semester is valid. If so, then we will add “Student ID,GPA,semester” as a ROW.

Respective Code:-

```
int main()
{
   FILE* flp1=fopen("D:/studentInfo.txt", "r");
   FILE* flp2=fopen("D:/grades.txt", "r");


   char id[15];
   float cg;
   int sem;
   scanf("%s", &id);
   scanf("%llf, %d", &cg, &sem);
   int chk=0, chk1=1;
   if(sem<0||cg<0){
      chk1=0;
   }
   char buffer[124];
   char *value;
   while(fgets(buffer, 124, flp1)){
      value= strtok(buffer, ",");
      if(strcmp(id, value)==0){
```

```
        chk=1;
    }
}fclose(flp1);

char buffer2[124];
while(fgets(buffer2, 124, flp2)){
    char chid[15];
    value= strtok(buffer2, ",");
    strcpy(chid, value);
    value=strtok(NULL, ",");
    value=strtok(NULL, ",");
    int s=atoi(value);
    if(sem==s){
        if((strcmp(chid, id))==0){
            chk1=0;
        }
    }
}
fclose(flp2);

if(chk==0||chk==0){
    printf("ERROR");
}else{
    FILE* fp=fopen("D:/grades.txt", "a+");
    fprintf(fp, "%s, %llf, %d",id, cg, sem);
```

```
        fclose(fp);
    }
    return 0;
}
```

Explanation:-

First after taking Student ID, GPA, semester as input, first it should be checked that if the student Id is valid or really exists in StudentInfo.txt file. If so, then GPA and semester will be checked. Like: is given GPA a negative number.

If all the information are valid then it will be added in grade.txt text file.

By the line-‘FILE* fp=fopen("D:/grades.txt", "a+");’ grades.txt file is open for append new row or line. ‘fprintf’ function is used to write the file.

While reading the file I keep comparing the value of Student ID from text file and the id given as input. Then GPA and semester was checked, if they meet the condition.

New findings:

-fprintf is used to write a file.

TASK-3:

Problem:

Given task is to take Student ID as input and to show his/her name and CGPA(average GPA through all semester)

Solution approach:-

First , Student name will be obtained from ‘StudentInfo.txt’ file, by matching the given studentID as input. Then respective student name will be stored. After that GPA of that student through-out the semester will be taken from the grades.txt file. And sum of GPA will be divided by numbers of semester. The result will be the CGPA.

CODE:

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

int main()
{
	FILE* flp1=fopen("D:/studentInfo.txt", "r");
	FILE* flp2=fopen("D:/grades.txt", "r");
	printf("give student ID as input:");
	char stid[15];
	char ansname[15];
	double anscg=0;
	int c=0;


	scanf("%s", &stid);

	char buffer1[1024];

	int row1=1;
	int column1=0;
	int chk;
	while(fgets(buffer1, 1024, flp1)){
	   column1=0;
```

```
    row1++;

    char* value= strtok(buffer1, ";");
    chk=0;
    while(value){
       if(column1==0){
          if(strcmp(value, stid)==0){
             chk=1;
          }
       }
       else if(column1==1){
          if(chk==1){
             strcpy(ansname, value);
             break;
          }

       }
          value  = strtok(NULL, ";");
          column1++;
    }if(chk==1){
       break;
    }


}if(chk==0){
```

```
    printf("ID is not found\n");
}
fclose(flp1);



char buffer2[1024];

int row2=1;
int column2=0;
int chk2;
int i=0;
while(fgets(buffer2, 1024, flp2)){
    column2=0;
    row2++;

    char* value= strtok(buffer2, ";");
    int chk2=0;
    while(value){
        if(column2==0){
            if(strcmp(value, stid)==0){
                chk2=1;
            }
        }
        else if(column2==1){
```

```
            if(chk2==1){
                double cg;
                char *ptr;
                cg=strtod(value, &ptr);
                anscg=anscg+cg;
                c++;
                //printf("%llf", anscg);
                //break;

            }

        }value  = strtok(NULL, ";");
        column2++;


    }
}
if(chk2==0){
    //printf("ID is not found\n");
}
fclose(flp2);



printf("id %s is %s \n", stid, ansname);
```

```
    printf("CG %s is %llf \n", stid, anscg/c);
    return 0;
}
```

Explanation:-

At first using a file pointer the text file StudentInfo.txt is opened. While reading the file match for input student ID is searched. When the id matched his/her name is stored into a string variable named ‘ansname’

Then again using another pointer Grades.txt text file is opened. While reading the file if, student ID is matched with given student ID the his/her GPA will be added to a variable anscg, which basically keeps the sum of previous GPAs. Then another variable ‘c’ keeps track of how many semester is passed. Whenever the Student ID will match, c will increment. Then anscg will be divided by c, the result is desired CGPA.

New finding:

-strcmp function is used to compare two strings.

-strcpy function is used to copy a string value into another one.