STUDENTS DATA BASE

Mastering Embedded System Online Diploma

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First Term (Final Project 2)

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1-Introduction:

Create data base for students using static linear queue.

2- Source codes:

•Main.c:

Create many functions to help us to enter, search and delete from data base.

```
while(1){
  Dprintf("\n choose the task that you want to perform\n");
  Dprintf("1. Add the student Details from text file\n");
  Dprintf("2. Add the student Details manually\n");
  Dprintf("3. Find the student Details by Roll Number\n");
  Dprintf("4. Find the student Details by First Name\n");
  Dprintf("5. Find the student Details by Course ID \n");
  Dprintf("6. Find the Total number of students \n");
  Dprintf("7. Delete the Students Details by Roll number\n");
  Dprintf("8. Update the Students Details by Roll number\n");
  Dprintf("9. Show all information \n");
  Dprintf("10. To Exit\n");
  Dprintf("----------------------\n");
  Dprintf("Enter your choice to perform the task :");
  scanf("%d",&ch);
```

main .c

•Data Base:

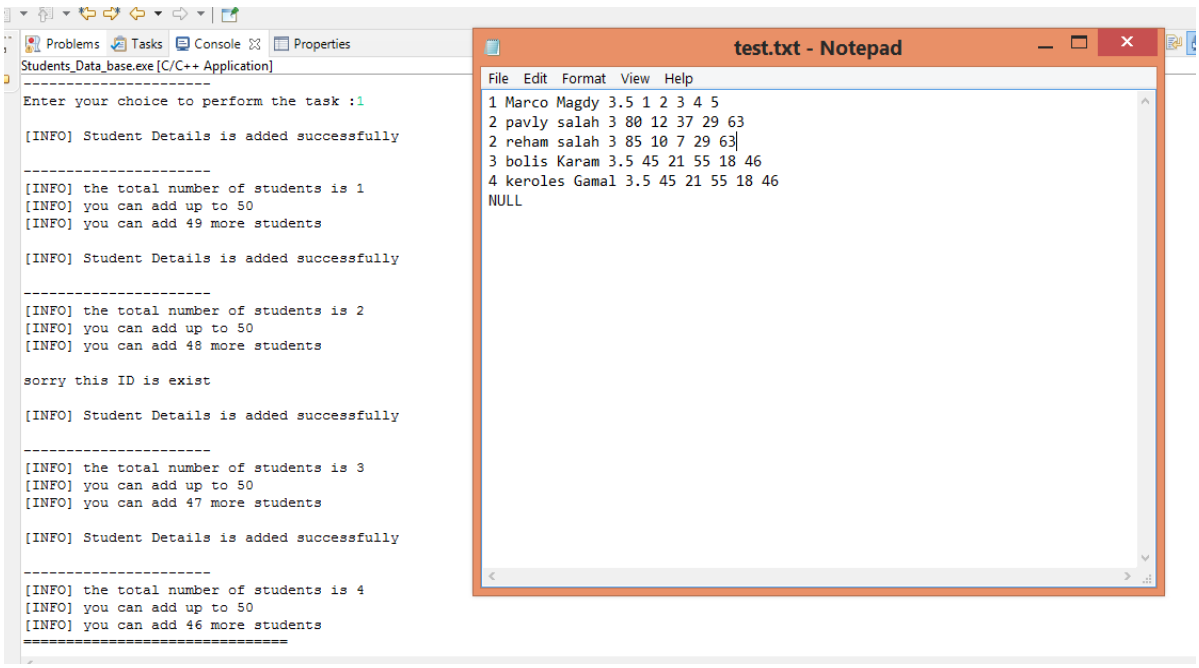
❖ Add student from file:

This function used to enter data of students from external text file, it reads data from file and store it in queue.

```
void add_student_file(FIFO_BUF_t* fifo_buffer){
  FILE* ptr;
  Sdata_t data_temp;
  FIFO_Status status_temp;
  ptr = fopen("test.txt","r");
  if (NULL == ptr) {
    printf("file can't be opened \n");
  }
  while (fscanf(ptr, "%d %s %s %f %d %d %d %d %d",&data_temp.roll,data_temp.fname,data_temp.lname,&data_temp.GPA,&data_temp.cid[0],&data_temp
    Dprintf("\n");
    if(!check_unique(fifo_buffer, data_temp.roll)){
        continue ;
      }
    status_temp = FIFO_enqueue(fifo_buffer, data_temp);
    if(status_temp==FIFO_no_error){
      Dprintf("[INFO] Student Details is added successfully\n");
      Dprintf("\n----------------------\n");
      total_numb_students(fifo_buffer);
    }
    else if(status_temp == FIFO_full){
      Dprintf("data base is full \n");
    }
    else{
      Dprintf("data base not initialize\n");
    }

  }
```

Execution Result:



❖ Add student manually:

This function used to enter data of students manually and store it in queue.

```
void add_student(FIFO_BUF_t* fifo_buffer){
  char d[50];
  int i,j;
  FIFO_Status status_temp;
  Sdata_t data_temp;
  Dprintf("Enter the Roll Number");
  gets(d);
  if(!check_unique(fifo_buffer, atoi(d))){
    return ;
  }
  data_temp.roll=atoi(d);
  Dprintf("Enter the First Name");
  gets(data_temp.fname);
  Dprintf("Enter the Second Name");
  gets(data_temp.lname);
  Dprintf("Enter the GPA you obtained ");
  gets(d);
  data_temp.GPA=atof(d);
  Dprintf("Enter the course ID of each course \n");
  for(i=0;i<Courses_number;i++){=}
  status_temp = FIFO_enqueue(fifo_buffer, data_temp);
  if(status_temp==FIFO_no_error){=}
  else if(status_temp == FIFO_full){=}
  else{=}


}
```

Execution Result:

```
----------------------
Enter your choice to perform the task :2
Enter the Roll Number10
Enter the First Namepavly
Enter the Second Nameahmed
Enter the GPA you obtained 3.5
Enter the course ID of each course
Course 1 id:10
Course 2 id:20
Course 3 id:30
Course 4 id:80
Course 5 id:50
[INFO] Student Details is added successfully

----------------------
[INFO] the total number of students is 5
[INFO] you can add up to 50
[INFO] you can add 45 more students
================================
```

❖ Check unique:

Before store data of student in queue in both previous functions, should check is the roll number of student doesn't use before.

```
int check_unique(FIFO_BUF_t* fifo_buffer,int r){
  int i;
  element_type* p_temp = fifo_buffer->tail;
  for(i=0;i<fifo_buffer->count;i++){
    if(r==p_temp->roll){
      Dprintf("sorry this ID is exist\n");
      return 0;
    }
    p_temp++;
  }
  return 1;
}
```

❖ Find data using roll number:

Used to print data of students using Roll number.

```
void find_details_rl(FIFO_BUF_t* fifo_buffer){
  int i,r;
  element_type* p_temp = fifo_buffer->tail;

  if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
    return;
  }

  Dprintf("Enter the Roll Number of the student:\n");
  scanf("%d",&r);
  for(i=0;i<fifo_buffer->count;i++){
    if(r == p_temp->roll){
      Dprintf("The Students Details are\n ");
      print_stud_data(p_temp);
      return;
    }
    p_temp++;
  }
  Dprintf("[ERORR] Roll Number %d not found\n ",r);
}
```

Execution Result:

```
----------------------
Enter your choice to perform the task :3
Enter the Roll Number of the student:
3
The Students Details are
 The First name is bolis
The Last name is Karam
The Roll Number is 3
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 45
2- The Course ID is 21
3- The Course ID is 55
4- The Course ID is 18
5- The Course ID is 46
==============================
```

```
----------------------
Enter your choice to perform the task :3
Enter the Roll Number of the student:
20
[ERORR] Roll Number 20 not found
 ==============================
```

❖ Find data using name:

Used to print data of students using Roll number.

```
void find_details_fname(FIFO_BUF_t* fifo_buffer){
   int i,f=0;
   char name [50];
   element_type* p_temp = fifo_buffer->tail;
   if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
     return;
   }
   Dprintf("Enter the first name of the student:\n");
   gets(name);
   for(i=0;i<fifo_buffer->count;i++){
     if(! stricmp(name,p_temp->fname)){
       f++;
       Dprintf("%d The Student Details are\n ",f);
       print_stud_data(p_temp);
     }
     p_temp++;
   }
   if(f==0){
     Dprintf("[ERORR] this name %s not found\n",name);
   }


 }
```

Execution Result:

```
----------------------
Enter your choice to perform the task :4
Enter the first name of the student:
PAVLY
1 The Student Details are
 The First name is pavly
The Last name is salah
The Roll Number is 2
The GPA is 3.000000
Courses recorded is :
1- The Course ID is 80
2- The Course ID is 12
3- The Course ID is 37
4- The Course ID is 29
5- The Course ID is 63
2 The Student Details are
 The First name is pavly
The Last name is ahmed
The Roll Number is 10
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 10
2- The Course ID is 20
3- The Course ID is 30
4- The Course ID is 80
5- The Course ID is 50
```

```
----------------------
Enter your choice to perform the task :4
Enter the first name of the student:
ahmed
[ERORR] this name ahmed not found
==============================
```

❖ Find details by course id:

Used to print details of all students recorded in this course using id course.

```
void find_details_courses(FIFO_BUF_t* fifo_buffer){
  int i,f=0,id,j;
  element_type* p_temp = fifo_buffer->tail;
  if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
    return;
  }
  Dprintf("Enter the ID of the course:\n");
  scanf("%d",&id);
  for(i=0;i<fifo_buffer->count;i++){
    for(j=0;j<Courses_number;j++){
      if(id==p_temp->cid[j]){
        f++;
        Dprintf("\n%d The Student Details are\n ",f);
        print_stud_data_without_Courses(p_temp);
        break;
      }
    }
    p_temp++;
  }
  if(f==0){
    Dprintf("[ERORR] Course ID %d not found\n",id);
  }

}
```

Execution Result:

```
----------------------
Enter your choice to perform the task :5
Enter the ID of the course:
80

1 The Student Details are
 The First name is pavly
The Last name is salah
The Roll Number is 2
The GPA is 3.000000

2 The Student Details are
 The First name is pavly
The Last name is ahmed
The Roll Number is 10
The GPA is 3.500000
================================
```

```
----------------------
Enter your choice to perform the task :5
Enter the ID of the course:
100
id is = 100
[ERORR] Course ID 100 not found
================================
```

❖ Find total number of students:

Used to print number of all students in data base.

```
void total_numb_students(FIFO_BUF_t* fifo_buffer){
  if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
    return;
  }
  Dprintf("[INFO] the total number of students is %d\n",fifo_buffer->count);
  Dprintf("[INFO] you can add up to %d\n",fifo_buffer->length);
  Dprintf("[INFO] you can add %d more students\n",fifo_buffer->length - fifo_buffer->count);

};
```

Execution Result:

```
----------------------
Enter your choice to perform the task :6
[INFO] the total number of students is 5
[INFO] you can add up to 50
[INFO] you can add 45 more students
==============================
```

❖ Delete student:

Used to delete data of student from data base using roll number.

```
void del_student(FIFO_BUF_t* fifo_buffer){
  element_type *p_curr,*p_next;
  int i,r,f=0;

  if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
    return;
  }
  p_curr=fifo_buffer->tail;
  Dprintf("Enter the Roll Number of the student:\n");
  scanf("%d",&r);
  for(i=0;i<fifo_buffer->count;i++){…}
  if(!f){…}
  p_next = p_curr+1;

  for(i;i<fifo_buffer->count;i++){…}
  fifo_buffer->Head--;
  fifo_buffer->count--;

}
```

Execution Result:

Data before delete

```
----------------------
Enter your choice to perform the task :9
data of Students are recorded in this base :
----------------
1- The First name is Marco
The Last name is Magdy
The Roll Number is 1
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 1
2- The Course ID is 2
3- The Course ID is 3
4- The Course ID is 4
5- The Course ID is 5
----------------
2- The First name is pavly
The Last name is salah
The Roll Number is 2
The GPA is 3.000000
Courses recorded is :
1- The Course ID is 80
2- The Course ID is 12
3- The Course ID is 37
4- The Course ID is 29
5- The Course ID is 63
----------------
3- The First name is bolis
The Last name is Karam
The Roll Number is 3
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 45
2- The Course ID is 21
3- The Course ID is 55
4- The Course ID is 18
5- The Course ID is 46
----------------
4- The First name is keroles
The Last name is Gamal
The Roll Number is 4
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 45
2- The Course ID is 21
3- The Course ID is 55
4- The Course ID is 18
5- The Course ID is 46
----------------
5- The First name is pavly
The Last name is ahmed
The Roll Number is 10
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 10
2- The Course ID is 20
3- The Course ID is 30
4- The Course ID is 80
5- The Course ID is 50
==============================
```

```
----------------------
Enter your choice to perform the task :7
Enter the Roll Number of the student:
4
==============================
```

Data after delete

```
Enter your choice to perform the task :9
data of Students are recorded in this base :
----------------
1- The First name is Marco
The Last name is Magdy
The Roll Number is 1
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 1
2- The Course ID is 2
3- The Course ID is 3
4- The Course ID is 4
5- The Course ID is 5
----------------
2- The First name is pavly
The Last name is salah
The Roll Number is 2
The GPA is 3.000000
Courses recorded is :
1- The Course ID is 80
2- The Course ID is 12
3- The Course ID is 37
4- The Course ID is 29
5- The Course ID is 63
----------------
3- The First name is bolis
The Last name is Karam
The Roll Number is 3
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 45
2- The Course ID is 21
3- The Course ID is 55
4- The Course ID is 18
5- The Course ID is 46
----------------
4- The First name is pavly
The Last name is ahmed
The Roll Number is 10
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 10
2- The Course ID is 20
3- The Course ID is 30
4- The Course ID is 80
5- The Course ID is 50
==============================
```

```
----------------------
Enter your choice to perform the task :7
Enter the Roll Number of the student:
100
[ERORR] Roll Number 100 not found
==============================
```

❖ update student:

Used to update data of student in data base using roll number.

```
void update_student(FIFO_BUF_t* fifo_buffer){
    int r,ch,i,c_ch;
    char temp[30];
    element_type* p_temp=fifo_buffer->tail;
    element_type* P_check=NULL;
    Dprintf("The Roll Number to update the entry :");
    scanf("%d",&r);
    for(i=0;i<fifo_buffer->count;i++){=}
    if(P_check == NULL){=}
    Dprintf("Choose data want to update:\n");
    Dprintf("1. first name\n");
    Dprintf("2. second name\n");
    Dprintf("3. Roll Number\n");
    Dprintf("4. GPA\n");
    Dprintf("5. Courses\n");
    scanf("%d",&ch);
    switch(ch){=}
    Dprintf("[INFO] UPDATED SUCESSFULLY\n");
```

Execution Result:

```
----------------------
Enter your choice to perform the task :8
The Roll Number to update the entry :1
Choose data want to update:
1. first name
2. second name
3. Roll Number
4. GPA
5. Courses
5
choose course id want to change
1- to update course id = 1
2- to update course id = 2
3- to update course id = 3
4- to update course id = 4
5- to update course id = 5
2
enter the new course id :
10
[INFO] UPDATED SUCESSFULLY
==============================
```

Data after update

```
----------------------
Enter your choice to perform the task :3
Enter the Roll Number of the student:
1
The Students Details are
 The First name is Marco
The Last name is Magdy
The Roll Number is 1
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 1
2- The Course ID is 10
3- The Course ID is 3
4- The Course ID is 4
5- The Course ID is 5
==============================
```

❖ show students:

Used to print details of all students recorded in data base.

```
void show_students(FIFO_BUF_t* fifo_buffer){
    int i=0;
    element_type* p_temp = fifo_buffer->tail;
    if(FIFO_is_exist(fifo_buffer)== FIFO_Null){
      return;
    }
    Dprintf("data of Students are recorded in this base :\n");
    for(i=0;i<fifo_buffer->count;i++){
      Dprintf("----------------\n");
      Dprintf("%d- ",i+1);
      print_stud_data(p_temp);
      p_temp++;

    }
  }
```

Execution Result:

```
Enter your choice to perform the task :9
data of Students are recorded in this base :
----------------
1- The First name is Marco
The Last name is Magdy
The Roll Number is 1
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 1
2- The Course ID is 10
3- The Course ID is 3
4- The Course ID is 4
5- The Course ID is 5
----------------
2- The First name is pavly
The Last name is salah
The Roll Number is 2
The GPA is 3.000000
Courses recorded is :
1- The Course ID is 80
2- The Course ID is 12
3- The Course ID is 37
4- The Course ID is 29
5- The Course ID is 63
----------------
3- The First name is bolis
The Last name is Karam
The Roll Number is 3
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 45
2- The Course ID is 21
3- The Course ID is 55
4- The Course ID is 18
5- The Course ID is 46
----------------
4- The First name is pavly
The Last name is ahmed
The Roll Number is 10
The GPA is 3.500000
Courses recorded is :
1- The Course ID is 10
2- The Course ID is 20
3- The Course ID is 30
4- The Course ID is 80
5- The Course ID is 50
```