

PF LAB 10 ASSIGNMENT TASKS

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Task 01

Write a C program can be used to read item details used in party and calculate all expenses, divide expenses in all friends equally. This program will read item name, price, quantity, number of friends and calculate amount and equally divide among friends.


Program:

```
#include <stdio.h>
struct expense
{
    char name [20];
    int price;
    int quantity;
    int frnd; //friends
};
int main()
{
    struct expense total;
    printf("Enter the Name of item ");
    scanf("%s", &total.name);
    printf("Enter the Price of item ");
    scanf("%d", &total.price);
    printf("Enter the quantity ");
    scanf("%d", &total.quantity);
    printf("Enter the number of Friends ");
    scanf("%d", &total.frnd);

    float amount= (float) total.price * (float) total.quantity / (float ) total.frnd;
    printf("\nThe Total amount on each friend is %.0f", amount);
}
```

Output:

(globals)

 C:\Users\HP\Desktop\Assignments\PF lab\lab 10\1.exe

Enter the Name of item chocolate


Enter the Price of item 20000

Enter the quantity 3

Enter the number of Friends 7

The Total amount on each friend is 8571

Process exited after 14.21 seconds with return value 0

Press any key to continue . . . 

Task 02

Create a structure named distance with two integer members feet and inches. Create a user define function named addDistance() that will take two structure objects as argument and print sum (addition) of them.

Program:

```
#include <stdio.h>

void addDistance(int , int );

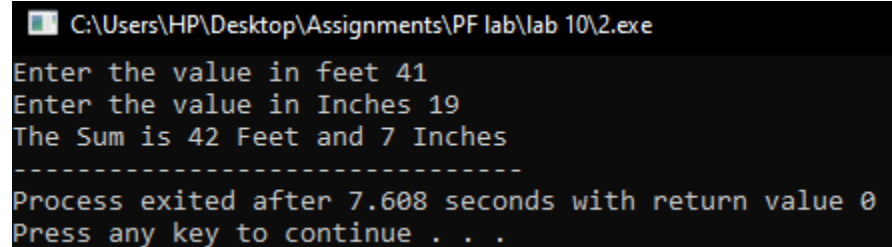
struct distance
{
    int feet;
    int inch;
}sum;

int main()
{
    printf("Enter the value in feet ");
    scanf("%d", &sum.feet);
    printf("Enter the value in Inches ");
    scanf("%d", &sum.inch);

    addDistance(sum.feet, sum.inch);
}

void addDistance(int feet, int inch)
{
    int inchToFeet = inch/12; //to convert inch to feet and then add it to feet
    inch = inch%12; //to find the value in inches
    feet = inchToFeet + feet;
    printf("The Sum is %d Feet and %d Inches", feet, inch);
}
```

Output:



```
C:\Users\HP\Desktop\Assignments\PF lab\lab 10\2.exe
Enter the value in feet 41
Enter the value in Inches 19
The Sum is 42 Feet and 7 Inches
-----
Process exited after 7.608 seconds with return value 0
Press any key to continue . . .
```

Task 03

Write a 'C' program to accept book details for 'n' books as book_no, book_title, author, publisher and cost using structures. Display these details as,

1. Books of a specific author
2. Books by a specific Publisher
3. All Books costing Rs. 500 and above.
4. All Books.

Program:

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

void nline(); //function for new line

struct book{
    int book_no;
    char book_title[20];
    char author[20];
    char publisher[20];
    int cost;
};

void Display(struct book *B, int j);

int main(){
    int n;
    printf("How many books are there? ");
    scanf("%d", &n);

    struct book B[n];

    for (int i=0; i<n; i++)
    {
        printf("Enter the book Number ");
        scanf("%d", &B[i].book_no);
        printf("Enter the book Title ");
        fflush(stdin);
        gets(B[i].book_title);
        printf("Enter the Author Name ");
        fflush(stdin);
```

```

        gets(B[i].author);
        printf("Enter the Publisher Name ");
        fflush(stdin);
        gets(B[i].publisher);
        printf("Please Enter the cost of the Book ");
        scanf("%d", &B[i].cost);
        printf("\n");
    }

    printf("Do you want to see \n1. Books of a specific author");
    printf("\n2. Books by a specific Publisher");
    printf("\n3. All Books costing Rs. 500 and above.");
    printf("\n4. All Books\n");

    int ch;
    scanf("%d", &ch);

    switch (ch)
    {
        case 1:{
            char Aname[20]; //authorname
            printf("Enter the author name you want to search ");
            fflush (stdin);
            gets(Aname);

            for (int i=0; i<n; i++)
            {
                if (strcmp(B[i].author,Aname)==0)
                {
                    Display(B,i);
                }
            }
            break;
        }
        case 2:{
            char Pub[20]; //Publisher Name
            printf("Enter the Publisher name you want to search ");
            fflush (stdin);
            gets(Pub);

```

```

        for (int i= 0; i<n; i++)
        {
            if (strcmp(B[i].publisher, Pub)==0)
            {
                Display(B, i);
            }
        }

        break;
    }
    case 3:{
        for (int i=0; i<n; i++)
        {
            if (B[i].cost>=500)
            {
                Display(B, i);
            }
        }
        break;
    }
    case 4:{
        for (int i=0; i<n; i++)
            Display (B, i);

        break;
    }
}
return 0;
}

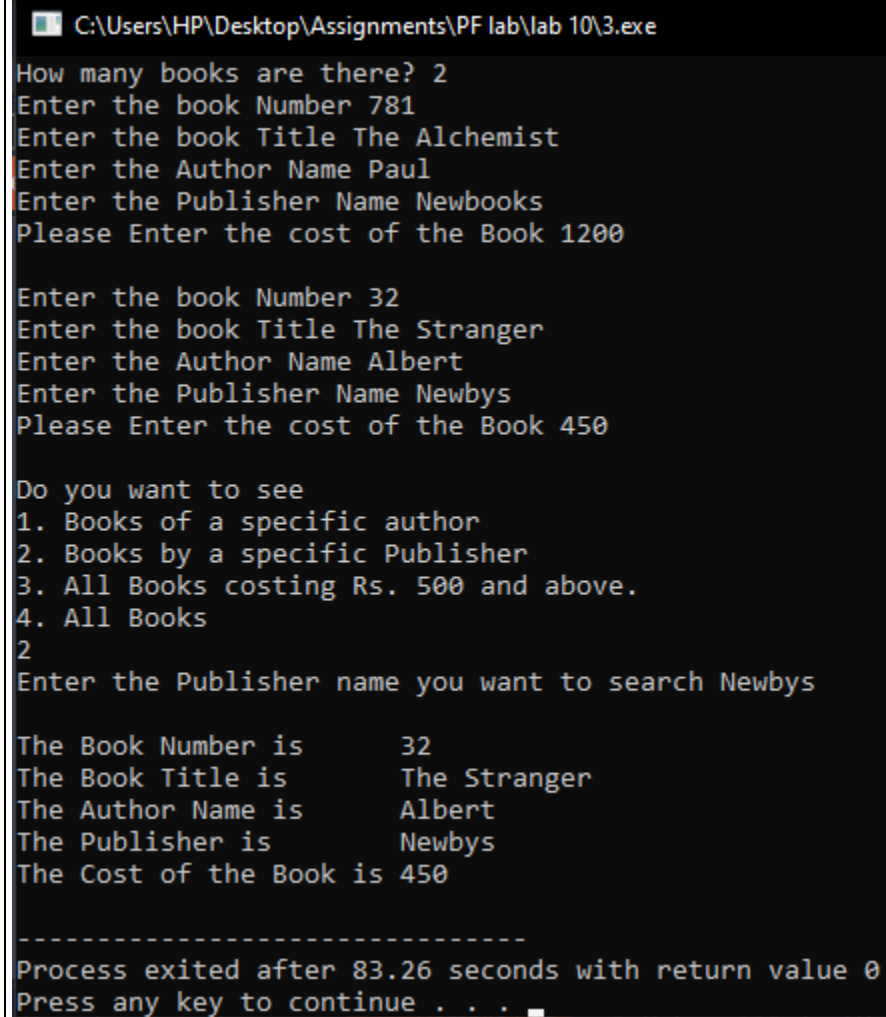
void nline() //function for new line
{
    printf("\n");
}

void Display( struct book *B, int j) //function to display the details
{
    printf("\nThe Book Number is      %d", B[j].book_no);
    printf("\nThe Book Title is      %s", B[j].book_title);
    printf("\nThe Author Name is%s", B[j].author);
    printf("\nThe Publisher is      %s", B[j].publisher);
}

```

```
        printf("\nThe Cost of the Book is      %d\n", B[j].cost);  
    }  
}
```

Output:



```
C:\Users\HP\Desktop\Assignments\PF lab\lab 10\3.exe  
How many books are there? 2  
Enter the book Number 781  
Enter the book Title The Alchemist  
Enter the Author Name Paul  
Enter the Publisher Name Newbooks  
Please Enter the cost of the Book 1200  
  
Enter the book Number 32  
Enter the book Title The Stranger  
Enter the Author Name Albert  
Enter the Publisher Name Newbys  
Please Enter the cost of the Book 450  
  
Do you want to see  
1. Books of a specific author  
2. Books by a specific Publisher  
3. All Books costing Rs. 500 and above.  
4. All Books  
2  
Enter the Publisher name you want to search Newbys  
  
The Book Number is      32  
The Book Title is        The Stranger  
The Author Name is       Albert  
The Publisher is         Newbys  
The Cost of the Book is  450  
  
-----  
Process exited after 83.26 seconds with return value 0  
Press any key to continue . . .
```

Task 04

Write a C program to accept details of 'n' employee(eno, ename, salary) and display the details of employee having highest salary. Use array of structure.

Sample output

```
/*How many employee info
you want to accept : Enter Limit: 2
-----
Enter details for 2 employees:
-----
Employee Number: 1
Name      : ali
Salary    : 500
-----
Employee Number: 2
Name      : khan
Salary    : 100
-----
Highest salary employee details:
-----
EMPNO    NAME    SALARY
-----
1        ali     500
-----
Process exited after 18.47 seconds with return value 0
Press any key to continue . . .
```

Program:

```
#include <stdio.h>

struct emp{
    int eno; //employee number
    char ename[20];
    int salary;
};

void line()
{
    printf("\n-----\n");
}

int main()
{
    int n;
    printf("How many Employee info\nYou want to accept : Enter Limit :");
    scanf("%d", &n);

    struct emp data[n];
    line();
    printf("Enter the details for %d employees", n);
    line();

    for (int i=0; i<n; i++)
    {
        printf("Employee Number    :");
```

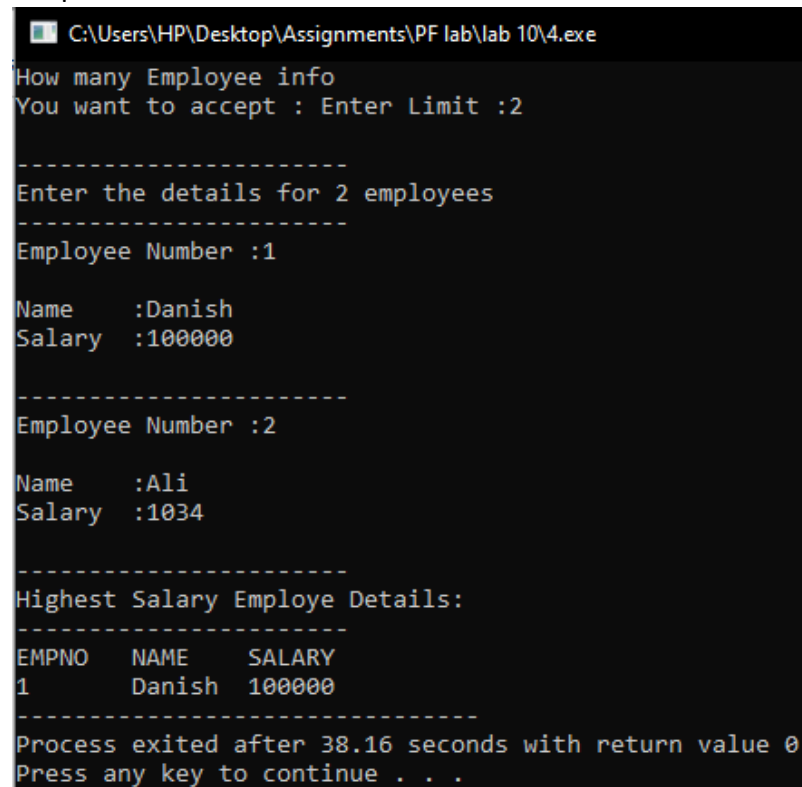


```

        scanf("%d", &data[i].eno);
        printf("\nName      :");
        fflush(stdin);
        gets(data[i].ename);
        printf("Salary  :");
        scanf("%d", &data[i].salary);
        line();
    }
    int min=data[0].salary;
    int max= 0;
    for (int i=0; i<n;i++)
    {
        if (data[i].salary>min)
            max=i;
    }
    printf("Highest Salary Employee Details:");
    line();
    printf("EMPNO      NAME  SALARY\n");
    printf("%d      %s      %d",data[max].eno, data[max].ename, data[max].salary);
}

```

Output:



```

C:\Users\HP\Desktop\Assignments\PF lab\lab 10\4.exe
How many Employee info
You want to accept : Enter Limit :2

-----
Enter the details for 2 employees
-----
Employee Number :1

Name      :Danish
Salary    :100000

-----
Employee Number :2

Name      :Ali
Salary    :1034

-----
Highest Salary Employee Details:
-----
EMPNO    NAME      SALARY
1         Danish    100000
-----
Process exited after 38.16 seconds with return value 0
Press any key to continue . . .

```

Task 05

Write a structure to store the name, account number and balance of customers (more than 10) and store their information

- 1 - Write a function to print the names of all the customers having balance less than \$200.
- 2 - Write a function to add \$100 in the balance of all the customers having more than \$1000 in their balance and then print the incremented value of their balance.

Program:

```
#include <stdio.h>

struct customers{
    char name[100];
    int an;//account number
    int balance;
};

void display (struct customers *detail);
void add(struct customers *detail);

int main()
{
    struct customers detail[2];

    for(int i=0; i<2; i++)
    {
        printf("Enter the name of customer %d ",i+1 );
        scanf(" %[^\\n]", &detail[i].name);

        printf("Enter the Account Number ");
        scanf("%d", &detail[i].an);

        printf("Enter the balance of the customer ");
        scanf(" %d", &detail[i].balance);

        printf("\\n");
    }

    display(detail);
    add(detail);
}
```

```
void display (struct customers *detail) //using pointer to pass the structure
```

```
{  
    printf("\nCustomers whose Balance is less than 200\n\n");  
    for (int i=0; i<2; i++)  
    {  
        if (detail[i].balance<200)  
            printf("%s\n", detail[i].name);  
    }  
}
```

```
void add(struct customers *detail) //using pointer to pass the structure
```

```
{  
    printf("\nCustomers whose balance is incremented\n");  
    for (int i=0; i<2; i++)  
    {  
        if (detail[i].balance>1000)  
        {  
            detail[i].balance+=100;  
            printf("%s    %d\n", detail[i].name, detail[i].balance);  
        }  
    }  
}
```

Output:

```
(globals)
C:\Users\HP\Desktop\Assignments\PF lab\lab 10\5.exe
Enter the name of customer 1 Danish
Enter the Account Number 23
Enter the balance of the customer 10000

Enter the name of customer 2 Ali
Enter the Account Number 100
Enter the balance of the customer 50

Customers whose Balance is less than 200

Ali

Customers whose balance is incremented
Danish 10100

-----
Process exited after 20.8 seconds with return value 0
Press any key to continue . . .
```

Task 06

A phone number, such as (212) 767-8900, can be thought of as having three parts: e.g., the area code (212), the exchange (767), and the number (8900). Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone.

Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers.

The interchange might look like this:

Enter area code: 415

Enter exchange: 555

Enter number: 1212

Then display like below:

My number is (212) 767-8900

Your number is (415) 555-1212

Program:

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

```
struct phone{  
    int n1, n2, n3;  
}mynum, yournum;
```


```
int main()  
{  
    struct phone mynum={212,767,8900};
```

```
    printf("Enter Area Code      : ");  
    scanf("%d", &yournum.n1);  
    printf("Enter Exchange      : ");  
    scanf("%d", &yournum.n2);  
    printf("Enter Number :");  
    scanf("%d", &yournum.n3);
```

```
    printf("\nMy Number is      (%d) %d-%d\n", mynum.n1, mynum.n2, mynum.n3);  
    printf("Your Number is      (%d) %d-%d", yournum.n1, yournum.n2, yournum.n3);
```

```
}
```

Output:

 C:\Users\HP\Desktop\Assignments\PF lab\lab 10\6.exe

Enter Area Code : 234


Enter Exchange : 235

Enter Number : 98765

My Number is (212) 767-8900

Your Number is (234) 235-98765

Process exited after 7.485 seconds with return value 0

Press any key to continue . . . 

NESTED STRUCTURES

Task 07

Create a struct to store two data for a person: name and date of birth. The date of birth must be another struct consisting on day, month and year. Finally, create an array of persons, ask the user for the data of two persons and display them.

Program:

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

```
struct dob{ //date of birth
    int day, month, year;
```

```
};
```

```
struct person{
    char name[100];
    struct dob data;
```

```
};
```

```
int main()
```

```
{
```

```
    struct person detail[2];
```

```
    for (int i=0; i<2; i++)
```

```
    {
```

```
        printf("\nEnter the Details of person %d\n\n",i+1);
```

```
        printf("Enter the Name      : ");
```

```
        scanf(" %[^\\n]", &detail[i].name);
```

```
        printf("Enter the Day, Month and Year repectively ");
```

```
        scanf("%d    %d    %d",    &detail[i].data.day,    &detail[i].data.month,
&detail[i].data.year);
```

```
    }
```

```
    for (int i=0; i<2; i++)
```

```
    {
```

```
        printf("\nPerson      %d\n", i+1);
```

```
        printf("Name %s\n",detail[i].name );
```

```
        printf("Date of Birth  %d-%d-%d\n\n", detail[i].data.day, detail[i].data.month,
detail[i].data.year);
```

```
    }
```

```
}
```

Output:

C:\Users\HP\Desktop\Assignments\PF lab\lab 10\7.exe

Enter the Details of person 1

Enter the Name : Danish

Enter the Day, Month and Year repectively 5 9 2004

Enter the Details of person 2

Enter the Name : Malik

Enter the Day, Month and Year repectively 4 6 2000

Person 1

Name Danish

Date of Birth 5-9-2004

Person 2

Name Malik

Date of Birth 4-6-2000

Process exited after 24.14 seconds with return value 0

Press any key to continue . . .

Task 08

Write a program that has two structures named school and student. The structure school contains two variables sch_Name, sch_id. Student structure contains four variable stu_id, stu_name, marks, Avg and also the structure address of school with that object such that school structure can be accessed from inside the student structure.

Create a function getData() to take record from user. How many records he wants to enter must also be asked.

Create a function display() to print the records of all students entered.

Program:

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

```
struct school{
    char sch_name[20];
    int sch_id;
};
```

```
struct student{
    int stu_id;
    char stu_name[20];
    int marks, Avg;
    struct school data;
};
```

```
void display(int , struct student *);
```

```
void getData(int , struct student *);
```

```
void getData(int n, struct student *record)
{
```

```
    for (int i=0; i<n; i++)
    {
        printf("\n\nDetails of Student %d", i+1);
```

```
        printf("\nEnter the Id ");
        scanf("%d", &record[i].stu_id);
```

```
        printf("Enter the Student Name ");
        scanf(" %[^\n]", &record[i].stu_name);
```

```
        printf("Enter the Marks ");
```



```

        scanf("%d", &record[i].marks);

        printf("Enter the Average of Student");
        scanf("%d", &record[i].Avg);

        printf("Enter the School Name ");
        scanf(" %[^\\n]", &record[i].data.sch_name );

        printf("Enter the School ID ");
        scanf("%d", &record[i].data.sch_id);
    }
}

void display(int n, struct student *record)
{
    for (int i=0; i<n; i++)
    {
        printf("\\n\\nDetails of Student %d", i+1);

        printf("\\nId    %d", record[i].stu_id);

        printf("\\nName    %s", record[i].stu_name);

        printf("\\nMarks    %d", record[i].marks);

        printf("\\nAverage    %d", record[i].Avg);

        printf("\\nSchool Name    %s", record[i].data.sch_name);

        printf("\\nSchool ID    %d", record[i].data.sch_id);
    }
}

int main()
{
    int n;
    printf("How may records do you want to enter? ");
    scanf("%d", &n);

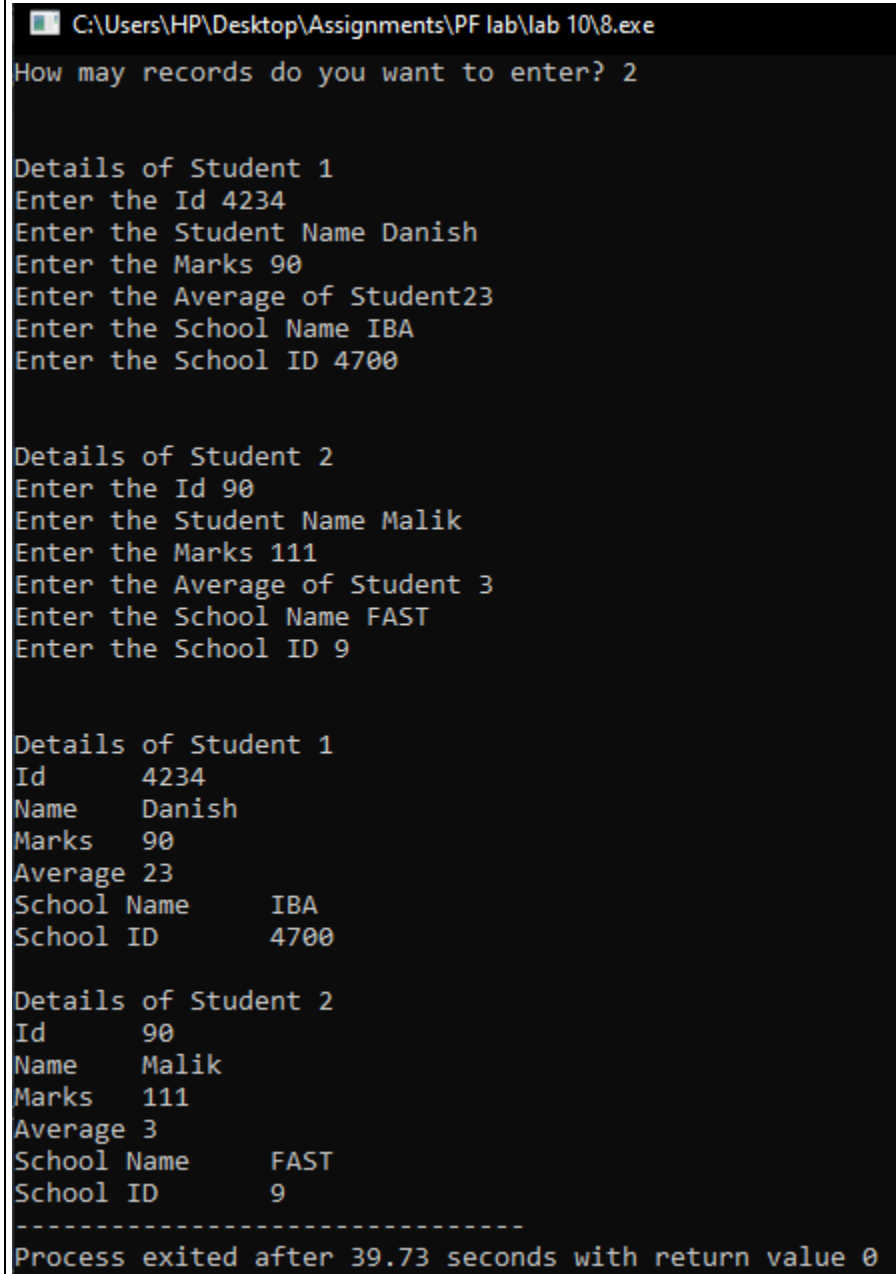
    struct student record[n];

```

```
        getData(n, record);

        display(n, record);
    }
}
```

Output:



```
C:\Users\HP\Desktop\Assignments\PF lab\lab 10\8.exe
How may records do you want to enter? 2

Details of Student 1
Enter the Id 4234
Enter the Student Name Danish
Enter the Marks 90
Enter the Average of Student 23
Enter the School Name IBA
Enter the School ID 4700

Details of Student 2
Enter the Id 90
Enter the Student Name Malik
Enter the Marks 111
Enter the Average of Student 3
Enter the School Name FAST
Enter the School ID 9

Details of Student 1
Id      4234
Name    Danish
Marks   90
Average 23
School Name    IBA
School ID      4700

Details of Student 2
Id      90
Name    Malik
Marks   111
Average 3
School Name    FAST
School ID      9

-----
Process exited after 39.73 seconds with return value 0
```