Assignment: - 08/ Pointers, structures and dynamic memory allocation

**Use a pointer to hold the base address of a 1D array consists of n-elements and write a C program to calculate the sum of those elements with the help of the pointer.**

#include<stdio.h>

main()

{int n,i,sum=0,a[n];

int \*p=&a[n];

printf("Enter the total turms: ");

scanf("%d",&n);

printf("Enter the elements :\n");

for (i=0;i<n;i++)

{

scanf("%d",&a[i]);

sum=sum+(\*(p+i));}

printf("Sum of the elements = %d.",sum);

}

Output

Enter the total turms: 5

Enter the elements :

1

2

3

4

5

Sum of the elements = 15.

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Process exited after 5.372 seconds with return value 0

Press any key to continue . . .

**Declare a structure student that represents the following hierarchical information- id, name (First, Middle, Last), Gender, DOB (day, month, year), marks of 3 subjects (English, Mathematics, Computer Science). Write a C program to store and display the database of n students by using array of structure. Also write a program to search a particular student(based on id or name) from array and display his/her details.**

#include<stdio.h>

typedef struct{

char First[10];

char Middle[10];

char Last[10];}

Name;

typedef struct{

int day;int month;int year;

}DOB;

typedef struct{

int Eng;int Maths;int CS;

}Marks;// Structure of Structures

typedef struct{

int id;

Name Nm;

char gd;

DOB db;

Marks Mks;}

Student;

int main()

{

Student S[3];int i,p;char myname[20];

//Reading value in structure Name

int a[50], size, b;

printf("\nEnter the number of students: ");

scanf("%d", &size);

printf("\n\nEnter the ID of the %d students: \n\n", size);

for(b = 0; b < size; b++)

scanf("%d", &a[b]);

for(b= 1; b < size; b++)

{

for(i=0;i<=b;i++)

{

printf("Enter information for %d Student:\n",i+1);

printf("Enter Students id:");

scanf("%d",&S[i].id);

puts("First Name:");

fflush(stdin);

gets(S[i].Nm.First);

fflush(stdin);

puts("Middle Name:");

gets(S[i].Nm.Middle);

fflush(stdin);

puts("Last Name:");

gets(S[i].Nm.Last);

printf("Enter Gender(F/M/O):");

scanf(" %c",&S[i].gd);

printf("Enter DoB(DD MM YY Format):");

scanf("%d",&S[i].db.day);

scanf("%d",&S[i].db.month);

scanf("%d",&S[i].db.year);

printf("Enter Students Marks (Eng Maths CS):\n");

scanf("%d",&S[i].Mks.Eng);

scanf("%d",&S[i].Mks.Maths);

scanf("%d",&S[i].Mks.CS);

}

printf("\nPrinting value of the student database:\n");

for(i=0;i<3;i++)

{

printf("Information for %d Student:\n",i+1);

printf("Id:%d ",S[i].id);

printf("Name:%s %s %s ",S[i].Nm.First, S[i].Nm.Middle, S[i].Nm.Last);

printf("Gender:%c ",S[i].gd);

printf("DoB:%d %d %d ",S[i].db.day,S[i].db.month,S[i].db.year);

printf("Marks (Eng Maths CS):%d %d %d",S[i].Mks.Eng,S[i].Mks.Maths,S[i].Mks.CS);

printf("\n");}

printf("Enter student id you want to search:");

scanf("%d",&p);

for(i=0;i<3;i++)

{

if(p==S[i].id)

{

printf("Information for %d Student:\n",i+1);

printf("Id:%d ",S[i].id);

printf("Name:%s %s %s ",S[i].Nm.First, S[i].Nm.Middle,S[i].Nm.Last);

printf("Gender:%c ",S[i].gd);

printf("DoB:%d %d %d ",S[i].db.day,S[i].db.month,S[i].db.year);

printf("Marks(Eng Maths CS):%d %d%d", S[i].Mks.Eng, S[i].Mks.Maths, S[i].Mks.CS);

printf("\n");

break;

return 0;

}}}

}

Output

Enter the number of students: 2

Enter the ID of the 2 students:

1

2

Enter information for 1 Student:

Enter Students id:1

First Name:

sabuj

Middle Name:

nil

Last Name:

golui

Enter Gender(F/M/O):m

Enter DoB(DD MM YY Format):05

08

2001

Enter Students Marks (Eng Maths CS):

90

95

100

Enter information for 2 Student:

Enter Students id:2

First Name:

sayan

Middle Name:

nil

Last Name:

paul

Enter Gender(F/M/O):m

Enter DoB(DD MM YY Format):04

06

2001

Enter Students Marks (Eng Maths CS):

95

100

100

Printing value of the student database:

Information for 1 Student:

Id:1 Name:sabuj nil golui Gender:m DoB:5 8 2001 Marks (Eng Maths CS):90 95 100

Information for 2 Student:

Id:2 Name:sayan nil paul Gender:m DoB:4 6 2001 Marks (Eng Maths CS):95 100 100

Information for 3 Student:

Id:2004056988 Name: C Gender: DoB:0 3080904 0 Marks (Eng Maths CS):2293296 0 0

Enter student id you want to search:1

Information for 1 Student:

Id:1 Name:sabuj nil golui Gender:m DoB:5 8 2001 Marks(Eng Maths CS):90 95100

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Process exited after 63.3 seconds with return value 0

Press any key to continue . . .

**Write a program on Insertion Sort using dynamic Memory allocation**

#include<stdio.h>

#include<stdlib.h>

int main()

{

int \*a,n,i,j,t;

printf("How many numbers you want to be sorted: ");

scanf("%d",&n);

a=(int \*)malloc(n \*sizeof(int));

printf("\nEnter %d Numbers: \n\n",n);

for(i=0;i<=n-1;i++)

{

scanf("%d", (a+i));

}

for(i=0;i<n;i++)

{

for(j=0;j<=i;j++)

{

if(\*(a+i)<\*(a+j))

{

t=\*(a+i);

\*(a+i)=\*(a+j);

\*(a+j)=t;

}

}

}

printf("\nAfter Sorting in Ascending Order: \n");

for(i=0;i<n;i++)

printf("\n%d",\*(a+i));

return 0;

}

Output

How many numbers you want to be sorted: 5

Enter 5 Numbers:

1

4

2

3

7

After Sorting in Ascending Order:

1

2

3

4

7

--------------------------------

Process exited after 7.339 seconds with return value 0

Press any key to continue . . .