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NAME : ANJALI SINHA

UNIVERSITY ROLL NO : 2023248

SECTION : R

Q8. Write a Program to input an array and reverse the array elements from particular index to the last using dynamic memory allocation.

\*/

#include <stdio.h>

#include <stdlib.h>

int main()

{

int n,i,RF,temp;

printf("\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*\n\n");

printf("Enter the size of the array: ");

scanf("%d",&n);

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

if(arr==NULL)

{

printf("Memory allocation failed!\n");

return 1;

}

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

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

{

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

}

printf("Enter the index from where to reverse (0 to %d): ",n-1);

scanf("%d",&RF);

printf("\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*\n\n");

if(RF<0||RF>=n)

{

printf("Invalid index. Please enter a value between 0 and %d\n",n-1);

free(arr);

return 1;

}

for(i=RF;i<(n+RF)/2;i++)

{

temp=arr[i];

arr[i]=arr[n-1-(i-RF)];

arr[n-1-(i-RF)]=temp;

}

printf("Reversed array from index %d to the last:\n",RF);

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

{

printf("%d ", arr[i]);

}

printf("\n");

free(arr);

return 0;

}

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the size of the array: 5

Enter the elements of the array:

2

3

4

5

6

Enter the index from where to reverse (0 to 4): 4

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*

Reversed array from index 4 to the last:

2 3 4 5 6

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the size of the array: 10

Enter the elements of the array:

9

8

7

6

5

4

3

2

1

0

Enter the index from where to reverse (0 to 9): 5

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*

Reversed array from index 5 to the last:

9 8 7 6 5 0 1 2 3 4

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SECTION : R

Q9. Design a structure named "Car" to store details like car ID, model, and rental rate per day. Write a C program to input data for n cars, calculate the total rental cost for a specified number of days, and display the results.

\*/

#include <stdio.h>

struct Car

{

int carID;

char model[50];

float rentalRate;

};

int main()

{

int n, i, days;

float totalCost;

printf("\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*\n\n");

printf("Enter the number of cars: ");

scanf("%d",&n);

struct Car cars[n];

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

{

printf("\nEnter details for Car %d:\n",i+1);

printf("Car ID: ");

scanf("%d",&cars[i].carID);

printf("Model: ");

scanf("%s",cars[i].model);

printf("Rental Rate per Day (float): ");

scanf("%f",&cars[i].rentalRate);

}

printf("\nEnter the number of rental days: ");

scanf("%d",&days);

printf("\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*\n\n");

printf("\nCar Rental Details:\n");

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

{

totalCost = cars[i].rentalRate\*days;

printf("Car ID: %d\n", cars[i].carID);

printf("Model: %s\n", cars[i].model);

printf("Rental Rate: %.2f per day\n", cars[i].rentalRate);

printf("Total Cost for %d days: %.2f\n", days, totalCost);

printf("\n");

}

return 0;

}

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the number of cars: 5

Enter details for Car 1:

Car ID: 10112

Model: top

Rental Rate per Day (float): 999.99

Enter details for Car 2:

Car ID: 10211

Model: mid

Rental Rate per Day (float): 888.99

Enter details for Car 3:

Car ID: 30232

Model: clasic

Rental Rate per Day (float): 1999.89

Enter details for Car 4:

Car ID: 98001

Model: xl

Rental Rate per Day (float): 7870.90

Enter details for Car 5:

Car ID: 20022

Model: hybrid

Rental Rate per Day (float): 6900.05

Enter the number of rental days: 3

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*

Car Rental Details:

Car ID: 10112

Model: top

Rental Rate: 999.99 per day

Total Cost for 3 days: 2999.97

Car ID: 10211

Model: mid

Rental Rate: 888.99 per day

Total Cost for 3 days: 2666.97

Car ID: 30232

Model: clasic

Rental Rate: 1999.89 per day

Total Cost for 3 days: 5999.67

Car ID: 98001

Model: xl

Rental Rate: 7870.90 per day

Total Cost for 3 days: 23612.70

Car ID: 20022

Model: hybrid

Rental Rate: 6900.05 per day

Total Cost for 3 days: 20700.15

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the number of cars: 3

Enter details for Car 1:

Car ID: 101

Model: clasic

Rental Rate per Day (float): 3000.90

Enter details for Car 2:

Car ID: 102

Model: EV

Rental Rate per Day (float): 8000.89

Enter details for Car 3:

Car ID: 201

Model: mini

Rental Rate per Day (float): 2000.10

Enter the number of rental days: 2

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*

Car Rental Details:

Car ID: 101

Model: clasic

Rental Rate: 3000.90 per day

Total Cost for 2 days: 6001.80

Car ID: 102

Model: EV

Rental Rate: 8000.89 per day

Total Cost for 2 days: 16001.78

Car ID: 201

Model: mini

Rental Rate: 2000.10 per day

Total Cost for 2 days: 4000.20

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SECTION : R

Q10. Create a structure to specify data on students given below: Roll number, Name, Department, Course, Year of joining Assume that there are not more than 450 students in the college.

(a) Write a function to print names of all students who joined in a particular year.

(b) Write a function to print the data of a student whose roll number is given.

\*/

#include <stdio.h>

#include <string.h>

#define MAX\_STUDENTS 450

struct Student

{

int r;

char name[50];

char dept[30];

char course[30];

int y;

};

void printByYear(struct Student studs[],int n,int yr)

{

int found=0;

printf("\nStudents joined in year %d:\n",yr);

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

{

if(studs[i].y==yr)

{

printf("%s\n",studs[i].name);

found=1;

}

}

if(!found)

{

printf("No students found who joined in year %d\n",yr);

}

}

void printByRollNumber(struct Student studs[],int n,int r)

{

int found=0;

printf("\nStudent details (Roll Number: %d):\n",r);

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

{

if(studs[i].r==r)

{

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

printf("Department: %s\n",studs[i].dept);

printf("Course: %s\n",studs[i].course);

printf("Year of Joining: %d\n",studs[i].y);

found = 1;

break;

}

}

if(!found)

{

printf("Student with roll number %d not found\n",r);

}

}

int main()

{

int n,yr,r;

printf("\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*\n\n");

printf("Enter the number of students (maximum %d): ",MAX\_STUDENTS);

scanf("%d",&n);

if (n>MAX\_STUDENTS)

{

printf("Error! Maximum student capacity is %d\n",MAX\_STUDENTS);

return 1;

}

struct Student studs[MAX\_STUDENTS];

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

{

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

printf("Roll Number: ");

scanf("%d",&studs[i].r);

printf("Name: ");

scanf("%s",studs[i].name);

printf("Department: ");

scanf("%s", studs[i].dept);

printf("Course: ");

scanf("%s", studs[i].course);

printf("Year of Joining: ");

scanf("%d",&studs[i].y);

}

printf("\nEnter year to find students who joined (e.g., 2023): ");

scanf("%d",&yr);

printf("\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*\n\n");

printByYear(studs,n,yr);

printf("\nEnter roll number of student to view details: ");

scanf("%d",&r);

printByRollNumber(studs,n,r);

return 0;

}

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the number of students (maximum 450): 5

Enter details for Student 1:

Roll Number: 1

Name: Anjali

Department: Btech

Course: Cse

Year of Joining: 2002

Enter details for Student 2:

Roll Number: 2

Name: Anushka

Department: Btech

Course: civil

Year of Joining: 2002

Enter details for Student 3:

Roll Number: 3

Name: ravi

Department: Btech

Course: Electrical

Year of Joining: 2003

Enter details for Student 4:

Roll Number: 4

Name: Megha

Department: Mtech

Course: electrical

Year of Joining: 2004

Enter details for Student 5:

Roll Number: 5

Name: Siddhangna

Department: Mtech

Course: cse

Year of Joining: 2002

Enter year to find students who joined (e.g., 2023): 2002

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*\*

Students joined in year 2002:

Anjali  
Anushka  
Siddhangna

\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*

Enter roll number of student to view details: 1

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*

Student details (Roll Number: 1):

Name: Anjali

Department: Btech

Course: Cse

Year of Joining: 2002

\*\*\*\*\*\*\*\*INPUT\*\*\*\*\*\*\*\*

Enter the number of students (maximum 450): 600

\*\*\*\*\*\*\*\*OUTPUT\*\*\*\*\*\*\*

Error! Maximum student capacity is 450