

C AND DATA STRUCTURE ASSIGNMENT

NO: 01

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20EUCS137

QUESTION 1

Print the Sum of Adjacent integers. The program must accept an integer array of size N as the input. For each integer, the program must print the sum of its adjacent integers as the output.

PROGRAM:

```
#include<stdio.h>

Int main(){
    int arr[100];
    int i,n;
    printf("Enter number of elements ");
    scanf("%d", &n);
    printf("Enter the elements of array ");
    for(i = 0;i<n;++i){
        scanf("%d", &arr[i]);
    }
    i = 1;
    printf("%d ", arr[i]);
    while(i<n){
        printf("%d ", arr[i-1] + arr[i+1]);
        i++;
    }
}
```

OUTPUT:

```
Enter number of elements of array 5
Enter the elements of array 20 30 40 50 60
30 60 80 100 50
```

QUESTION 2:

Write a C program to print only unique elements in an array using function

PROGRAM:

```
#include<stdio.h>

int main(){
int a[100],arr[1000],N;
printf("Enter the number of elements of array ");
scanf("%d", &N);
printf("Enter the elements of array ");
for(int i= 0 ;i<N;i++)
    scanf("%d", &a[i]);
for(int i = 0 ; i<N ; i++){
    if(arr[a[i]] != 1){
        printf("%d ", a[i]);
        arr[a[i]] = 1;
    }
}
}
```

OUTPUT:

```
Enter the number of elements of array 5
Enter the elements of array 10 20 10 30 10
10 20 30
```

QUESTION 3:

Write a C program to check the given number is perfect number or not using function

PROGRAM:

```
#include<stdio.h>

int main()
{
    int a;

    printf("Enter the number to find it's perfect or not ");
    scanf("%d", &a);
    perfect(a);
}

void perfect(int x){
    int per_a = 1;
    for(int i=2;i<x;i++)
    {
        if(x%i == 0)
            per_a = per_a + i;
    }
    if(x == per_a)
        printf("The given number %d is perfect number ", x);
    else
        printf("The given number %d is not a perfect number ", x);
}
```

OUTPUT:

```
Enter the number to find it's perfect or not 28
The given number 28 is perfect number
```

QUESTION 4:

Write a C program to reverse a given string using recursion

PROGRAM:

```
#include<stdio.h>

int main()
{
    printf("Enter the string ");
    rev_str();
    return 0;
}

void rev_str() {
    char c;
    scanf("%c", &c);
    if (c != '\n') {
        rev_str();
        printf("%c", c);
    }
}
```

OUTPUT:

```
Enter the string palindrome
emordnilap
```

QUESTION 5:

Write a C program to compute the sum of all elements in an array using pointers

PROGRAM:

```
#include<stdio.h>

int main()
{
    int a[100], sum = 0, N;
    int *ptr;
    printf("Enter the number of elements of array ");
    scanf("%d", &N);
    printf("Enter the elements of array ");
    for(int i=0;i<N;i++)
        scanf("%d", &a[i]);

    ptr = a;
    for(int i=0;i<N;i++)
    {
        sum = sum + *ptr;
        ptr++;
    }
    printf("The sum of elements of array was = %d", sum);
}
```

OUTPUT:

```
Enter the number of elements of array 5
Enter the elements of array 10 20 30 40 50
The sum of elements of array was = 150
```

QUESTION 6:

Write a C program to calculate class pass percentage by using structure

PROGRAM:

```
#include<stdio.h>

struct passpercentage{
    int m1, m2, m3, m4, m5, total,passorfail;}passper[100];

int main(){
    int N,num_pass;

    printf("Enter the number of students ");

    scanf("%d", &N);

    for(int i=0;i<N;i++){

        printf("Enter the mark of all 5 subjects of student number %d ", i+1);

        scanf("%d%d%d%d%d",&passper[i].m1,&passper[i].m2,&passper[i].m3,&passper[i].m4,&passper[i].m5);

    }

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

        passper[i].total = passper[i].m1 +passper[i].m2 +passper[i].m3 +passper[i].m4 +passper[i].m5;

    for(int i=0;i<N;i++){

        if(passper[i].m1 > 50 && passper[i].m2 > 50 && passper[i].m3 > 50 && passper[i].m4 > 50
        && passper[i].m5 > 50 )

            passper[i].passorfail = 1;

        else

            passper[i].passorfail = 0;

    }

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

        if(passper[i].passorfail == 1)

            num_pass += 1;

    printf("total percentage of students pass\n%.2f pass", (num_pass*100.0)/N);}
```

OUTPUT:

```
Enter the number of students 4
Enter the mark of all 5 subjects of student number 1 10 80 90 75 64
Enter the mark of all 5 subjects of student number 2 80 92 64 75 65
Enter the mark of all 5 subjects of student number 3 80 90 70 60 70
Enter the mark of all 5 subjects of student number 4 90 80 75 64 85
total percentage of students pass
75.00 pass
```