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COURSE : PROBLEM SOLVING-C

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1) //Create a structure that contains the following details  
// for 5 students.  
// Name, Roll no, Dept, Sub1Mark, Sub2Mark, Sub3Mark, Total, Average

CODE:

```
#include <stdio.h>
Struct student
{
    Char name [50];
    int roll;
    float engmarks;
    float mathmarks;
    float scimarks;
    float totalmarks;
    float Average;
}
int main()
{
    int i;
    Struct student s;
    for (i = 0; i < 5; i++) while (i < 5)
    {
        printf ("Enter the Information of Students : \n\n");
        printf ("Enter Name : ");
        scanf ("%s", s.name);
```

```
printf("Enter the Roll No. : ");  
scanf("%d", &s.roll);
```

```
printf("Enter English Marks : ");  
scanf("%f", &s.engmarks);
```

```
printf("Enter Math Marks : ");  
scanf("%f", &s.mathmarks);
```

```
printf("Enter Science Marks");  
scanf("%f", &s.scimarks);
```

```
printf("\n");
```

```
s.totalmarks = (s.scimarks + s.engmarks + s.mathmarks);
```

```
s.Average = (s.scimarks + s.engmarks + s.mathmarks) / 3;
```

```
for(i=0; i<4; i++)
```

```
printf("In Display Information For Student %d\n", i+1);
```

```
printf("Name : %s \n", s.name);
```

```
printf("Roll no: %d \n", s.roll);
```

```
printf("Eng Marks: %.0-2f \n", s.engmarks);
```

```
printf("Math Marks: %.0-2f \n", s.mathmarks);
```

```
printf("Sci Marks: %.0-2f \n", s.scimarks);
```

```
printf("Total Marks : %.0-2f \n", s.totalmarks);
```

```
printf("Average Marks: %.0-2f \n", s.Average);
```

```
};
```

return 0;

2

Output -

Enter Name: Arjun

Enter Roll no: 45

Enter Eng Marks: 78

Enter Math Marks: 89

Enter Science Marks: 71

Displaying (Info) for Student 1 —  
(Information)

Name : Arjun

Roll no: 45

Eng Marks: 78

Math Marks: 89

Science Marks: 71

Total Marks : 238.00

Average Marks : 79.333336

repeat for 5 students.

- 2) 1\* Write a Program to create a structure named company which has name, address, phone and no of employees as member variable. Read name of company, its address, phone and no. of employee. Finally display this members' value.

```
#include <stdio.h>
struct company
{
    char name [30];
    char address [100];
    int noOfEmployees;
    long long phoneNo;
};

int main()
{
    struct company c;
    printf ("Enter details :\n");
    printf ("Enter Name of the Company : ");
    gets (c.name);
    printf ("Enter the no. of employees working in
            that company : ");
    scanf ("%d", &c.noOfEmployees);
    printf ("Phone number : ");
    scanf ("%ld", &c.phoneNo);
    printf ("Entered Details is :\n");
    printf ("Company Name : %s\n", c.name);
    printf ("Company Address : %s\n", c.address);
    printf ("Number of Employees Working : %d\n", c.noOfEmployees);
    printf ("Phone number : %ld\n", c.phoneNo);
    return 0;
}
```

OUTPUT :-

Enter Details:

Enter Name of the company: TCS

Enter Address : Adyar

Enter the no of employees working in that company: 500

Phone Number: 7878763636.

Entered detail is:

Company Name: TCS

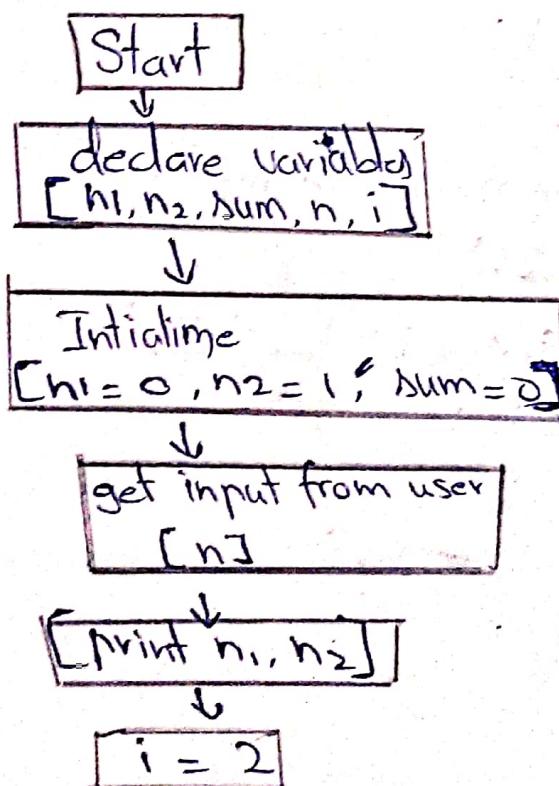
Company Address : Adyar

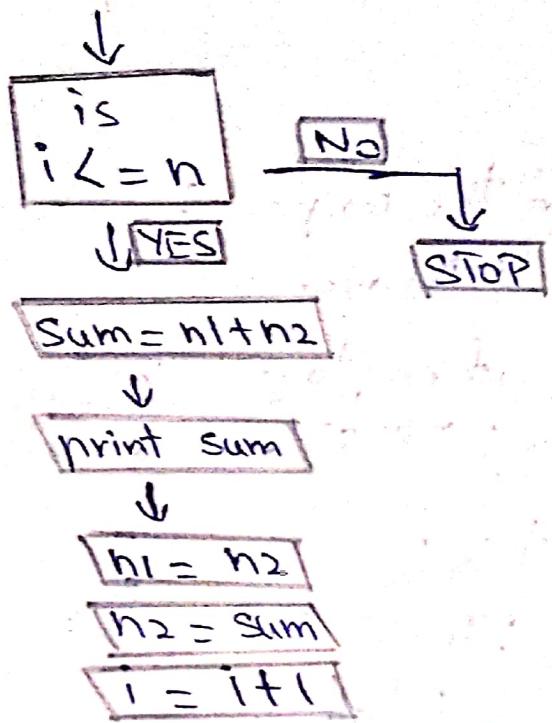
Number of Employees working: 500

Phone Number: 7878763636.

3) // To find fibonacci Series

flowchart:-



CODE :-

```

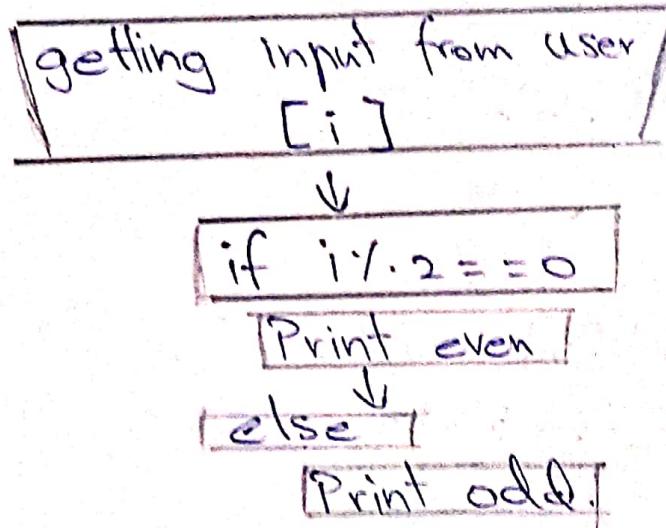
#include <stdio.h>
int main ()
{
    int i, n;
    int n1=0, n2=1;
    int sum=0;
    printf ("Enter the no. of terms");
    scanf ("%d", &n)
    printf ("Fibonacci Series : %d, %d, ", n1, n2);
    for (i=3; i <= n; i++)
    {
        printf ("%d, ", sum);
        n1=n2;
        n2=sum;
        sum=n1+n2;
    }
    return 0;
}
  
```

### OUTPUT:-

Enter the number of terms : 6

Fibonacci Series : 0, 1, 2, 3, 5,

4) // To ~~find~~ check the number is even or odd.



### CODE :

```
#include <stdio.h>
int main()
{
    int i;
    printf("Enter a number:");
    scanf("%d", &i);
    if (i % 2 == 0)
    {
        printf("Even");
    }
    else
    {
        printf("Odd");
    }
    return 0;
}
```

OUTPUT:-

Enter a number : 11

Odd.

- 5) // Write a C Program to get  $2 \times 2$  matrices and do the matrix multiplication.

```
#include <stdio.h>
int main()
{
    int mat1[2][2], mat2[2][2], mat3[2][2], sum=0, i, j, k;
    printf("Enter first 2*2 matrix element: ");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            scanf("%d", &mat1[i][j]);
        }
    }
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            scanf("%d", &mat2[i][j]);
        }
    }
    printf("\n Multiplying two matrices ... ");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            sum = 0;
            for(k=0; k<2; k++)
            {
                sum = sum + mat1[i][k] * mat2[k][j];
            }
            mat3[i][j] = sum;
        }
    }
    printf("\n Resultant matrix is: ");
    for(i=0; i<2; i++)
    {
        for(j=0; j<2; j++)
        {
            printf("%d ", mat3[i][j]);
        }
    }
}
```

{

sum = 0;

for (k = 0; k &lt; 2; k++)

{ sum = sum + mat1[i][k] \* mat2[k][~~j~~]; }

mat3[i][j] = sum;

}

}

printf("Multiplication result of the two given matrix is:\n")

for (i = 0; i &lt; 2; i++)

{

for (j = 0; j &lt; 2; j++)

{ printf("%d\t", mat3[i][j]); }

printf("\n");

}

return 0;

}

OUT PUT :-

Enter first 2 \* 2 matrix element : 4

5

4

5

Enter second  $2 \times 2$  matrix element : 6

4  
5  
4

Multiplying two matrices.....

Multiplication result of the two given Matrix is:

49 36  
49 36

## 6) Pattern Printing

```
#include <stdio.h>
int main()
{
    int i, j, now;
    printf ("In How many rows\n");
    scanf ("%d", &now);
    for (i = 1 ; i <= now ; i++)
    {
        for (j = 1 ; j <= i ; j++)
        {
            printf ("%d", j);
        }
        printf ("\n");
        printf ("\n");
    }
}
```

```
    return 0;
```

```
}
```

### OUTPUT:-

How many rows

5

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

### 7) // Checking an element whether in array or not

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

```
Void main()
```

```
{
```

```
    int a[1000], i, n, key;
```

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

```
    scanf("%d", &n);
```

```
    printf("Enter elements in the array: ");
```

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

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

```
}
```

```
printf("Enter the key:");
scanf("%d", &key);
for (i=0; i<n; i++)
{
    if (a[i]==key)
    {
        printf("elements found in the array
               at the position %d\n", i);
        break;
    }
}
```

OUTPUT:-

Enter the size of the array: 5

Enter elements in the array: 1

2

3

4

5

Enter the key: 5

element found in the array at position 5

8) // Write a C Program to find the Armstrong Numbers from the given interval.

CODE:

```
#include <stdio.h>
int main()
{
    int s=1, e=500, num, n, tar=0, i, sum;
    for (i=s; i<=e; i++)
    {
        num = i;
        sum = i;
        while (num != 0)
        {
            n = num % 10;
            tar = tar + (n * n * n);
            num = num / 10;
        }
        if (sum == tar)
        {
            printf("%d\n", i);
        }
        tar = 0;
    }
    return 0;
}
```

OUTPUT:

0  
1  
153  
370  
371  
407