**Ranada Prasad Shaha University**

Dept. of Computer Science and Engineering

A Lab Report

On

**Structured Programming Language**

Course code : 134

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**I certify that the attached assignment is my own work and that any material drawn from other sources has been acknowledged. This work has not previously been submitted for assessment in any other unit or course.**

**Date: 18 July 2018**

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**Problem No: 01**

**Problem Name:** Write a **C** program that find the average of three integers.

**Algorithm:**

**Step 01:** Start

**Step 02:** Output “Average of three integers”

**Step 03:** Output “Input three integer”

**Step 04:** Input a,b,c

**Step 05:** ave = (a+b+c)/3.0

**Step 06:** Output (“Average is \_”ave)

**Step 07:** Stop/End

**Flowchart:**

“Average is”, ave

Ave = (a+b+c) /3.0

Input a,b,c

Input three integer

Average of three integer

**C Program:**

#include<stdio.h>

int main()

{

int a,b,c;

float ave;

printf ("Average of Three Integer Numbers \n");

printf ("\n Input First Integer Number = ");

scanf ("%d",&a);

printf ("\nInput Second Integer Number = ");

scanf ("%d",&b);

printf ("\nInput Third Integer Number = ");

scanf ("%d",&c);

ave = (a+b+c)/3.0;

printf ("Average of Three number Is = %.3f”,ave);

return 0;

}

**Problem No: 02**

**Problem Name:** Write a **C** program that convert given temperature in Fahrenheit to Celsius.

**Algorithm:**

**Step 01:** Start

**Step 02:** Input temperature in Fahrenheit

**Step 03:** Calculate Celsius c = (f-32)\*1.8

**Step 04:** Show temperature in Celsius

**Step 05:** End

**Flow Chart**

Temperature in C

C = (F-32)/1.8

Input Temperature in F

**C Program:**

#include<stdio.h>

int main ()

{

float f,c;

printf("\n\t Input temperature in Fehrenheit=");

scanf("%f",&f);

c=(f-32)\*1.8;

printf ("\n\t Show Temperature in Celsius=%.2f",c);

return 0;

}

**Problem No: 03**

**Problem Name:** Write a **C** program that determine a integer number is even or odd.

**Algorithm:**

**Step 01:** Start

**Step 02:** Input enter an integer number

**Step 03:** if (n%==0) then

**Step 04:** Output number is even

**Step 05:** else output number is odd

**Step 06:** End

**Program:**

#include<stdio.h> // Test the number number even or odd

int main ()

{

int n;

printf("\n\t Enter an integer number=");

scanf("%d",&n);

if(n%2==0)

printf("\n\t %d is even",n);

else

printf("\n\t %d is odd",n);

return 0;

}

**Flow chart**

No

Yes

Odd Number

n%2==0

Input n

“Enter an Integer Number”

Even Number

**Problem No: 04**

**Problem Name:** Write a **C** program that calculate the grading system in an academic institution

**Algorithm:**

**Step 01:** Start

**Step 02:** Input mark

**Step 03:** if (mark>79) output “grade=A+”

**Step 04:** else if (mark>74) output “grade=A”

**Step 05:** else if (mark>69) output “grade=A-”

**Step 06:** else if (mark>64) output “grade=B+”

**Step 07:** else if (mark>59) output “grade=B”

**Step 08:** else if (mark>54) output “grade=B-”

**Step 09:** else if (mark>49) output “grade=C+”

**Step 10:** else if (mark>44) output “grade=C”

**Step 11:** else if (mark>39) output “grade=D”

**Step 12:** else output “You are FAIL”

**Step 13:** End

**Flow Chart**

Input Mark

Yes

Grade = A+

Mark >=80

No

Yes

Mark >=75

Grade = A

No

Yes

Mark >=70

Grade = A-

No

Yes

Grade = B+

Mark >=65

No

Yes

Mark >=60

Grade = B

No

Yes

Mark >=55

Grade = B-

No

No

No

No

Yes

Yes

Yes

Yes

Grade = F

Grade = C+

Grade = C

Grade = D

Mark >=50

Mark >=45

Mark >=40

Mark < 40

**C Program:**

#include <stdio.h>

int main ()

{

int mark;

printf ("Enter your mark: ");

scanf ("%d", &mark);

if ( mark>=80 && mark <=100)

{

printf ("Your Grade is A+");}

else if ( mark>=75 && mark <80)

printf ( "Your Grade is A");

else if ( mark>=70 && mark <75)

printf ( "Your Grade is A-");

else if ( mark>=65 && mark <70)

printf ( "Your Grade is B+");

else if ( mark>= 60&& mark <65)

printf ( "Your Grade is B-");

else if ( mark>=55 && mark <60)

printf ( "Your Grade is C+");

else if ( mark>=50 && mark <55)

printf ( "Your Grade is C");

else if ( mark>=45 && mark <50)

printf ( "Your Grade is D");

else

printf("Your Grade is F");

return 0;

}

**Problem No:05**

**Problem Name:** Write a **C** program that find the factorial of a given integer number

**Algorithm:**

**Step 01:** Start

**Step 02:** Input Enter an number, n

**Step 03:** (Initialize) i=1, f=1,

**Step 04:** Repeat Step 04 through 6 until i=n

**Step 05:** f=f\*i

**Step 06:** i=i+1

**Step 07:** Output “Factorial of %d! of=%d”n,f

**Step 08:** Stop

**Program:**

#include<stdio.h>

int main ()

{

int i,f=1,n;

printf("\n\t Enter an number=");

scanf("%d",&n);

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

f=f\*i;

{

printf("\n\t Factorial of %d! is=%d",n,f);

}

return 0;

}

**Flow Chart**

i > 0

i=i+1

f=f\*i

“Enter an Integer Number”

f=1

Input n

No

Yes

Print the Factorial of given value

**Problem no:** 06.

**Problem name:** Write a C program to determine the sum of the following harmonic series for a given value of N.

1 + ½ + 1/3 + ……….. + 1/n.

**Algorithm:**

Step 1: Start

Step 2: Input the value of N

Step 3: Initialized i=1

Step 4: While i<=n repeat step 5

Step 5: sum=sum+(1.0/i), i++

Step 6: Print the sum is

Step 7: End

**Flowchart**

Print The Sum is

Sum = sum +i ; i++

i<=n

Initialized the value of i=1

Input the value of N

No Yes

**C Program:**

#include<stdio.h>

int main()

{

int n, i;

float sum=0.0;

printf ( “ Input an Integer Number : “);

scanf("%d", &n);

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

{

sum=sum+(1.0/i);

}

{

printf(" %.3f",sum);

}

return 0;

}

**Problem No: 07**

**Problem name:** Write a C program to determine the sum of the following harmonic series for a given value of N.

1/12 + 2/22 + 3/32 + ……….. + n/n2.

**Algorithm:**

Step 1: Start

Step 2: Input the value of N

Step 3: Initialized i=1

Step 4: While i<=n repeat step 5

Step 5: sum=sum+(i+i/i), i++

Step 6: Print the sum is

Step 7: End

**Flowchart**

Print The Sum is

i<=n

Initialized the value of i=1

Input the value of N

No Yes

t=i\*i; sum=i+(i/t);

**C Program:**

#include<stdio.h>

int main()

{

int n,i;

float t,sum=0.0;

printf ( “ Input an Integer Number : “);

scanf("%d",&n);

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

{

t=i\*i;

sum=i+(i/t);

}

printf("%f",sum);

return 0;

}

**Problem no: 08**

**Problem name:** Write a **C** program to print a Fibonacci series of a given range.

**Algorithm:**

Step 1: Start

Step 2: Input the value of N

Step 3: Initialized the value first = 0, second=1

Step 4: Print the first value

Step 5: Initialized the value c=0

Step 6: While c<n repeat the step 7

Step 7: next= first + second, first = second, second = next, c ++

Step 8: Print the value of next

Step 9: End

**Flow chart**

Input the value of N

Initialized first=0, second=1,c=0

Next= first + second, first= secod, second= next, c ++

Print the first value

C<n

**C Program:**

#include<stdio.h>

int main()

{

int n, first=0, second=1,next,c;

scanf("%d",&n);

printf("First %d terms ",n);

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

{

if (c<=1)

next = c;

else

{

next = first+second;

first=second;

second=next;

}

printf("%d\n",next);

}

return 0;

}

**Problem No: 09**

**Problem name:** Write a **C** program to print the following pyramid.

0

1 1

2 2 2

3 3 3 3

**Algorithm:**

Step 1: Start

Step 2: Declare the variable n, I, j, k;

Step 3: Initialized the value n=3, i=0 and increment the value of i;

Step 4: While i<=n

Step 5: Print wide space

Step 6: j=0 and j++

Step 7: j<=i

Step 8: Print the value of i

Step 9: Print new line

Step 10: End

**Flowchart:**

J=0, j ++

i<=n

Initialized the value of n=3, i=0

Print the value of i

**C Program:**

#include<stdio.h>

int main()

{

int i,j,k,n;

n=3;

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

{

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

{

printf(" ");

}

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

{

printf("%d",i);

}

printf("\n");

}

Return 0;

}