**SSN COLLEGE OF ENGINEERING (Autonomous)**

**Affiliated to Anna University**

**DEPARTMENT OF CSE**

**UCS 1211 PROGRAMMING IN C LABORATORY**

**A2: MODULAR PROGRAMMING IN C**

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**CLASS: CSE-B (SEMESTER-2)**

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**1.)Program name: sum of odd and even numbers.**

#include<stdio.h>

int check(int n)

{

if(n%2==0)

return 1;

else

return 0;

}

void main()

{ int n,odd=0,even=0;

printf("Enter the number to check");

scanf("%d",&n);

int flag=check(n);

if(flag==1)

printf("Even");

else

printf("odd");

printf("Enter the number of integers");

scanf("%d",&n);

int a;

printf("Enter the numbers to add");

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

{ scanf("%d",&a);

int flag=check(a);

if(flag==1)

even=even+a;

else

odd=odd+a;

}

printf("The sum of even numbers is %d",even);

printf("The sum of odd numbers is %d",odd);

}

**OUTPUT:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 1.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the number to check 1

Odd

Enter the number of integers 5

Enter the numbers to add

2

4

6

8

0

The sum of even numbers is 20

The sum of odd numbers is 0

**2.)Program name: reverse a given number using functions.**

#include<stdio.h>

int reverse(int \*n)

{ int rem,sum=0;

while(\*n!=0)

{ rem=\*n%10;

sum=sum\*10+rem;

\*n=\*n/10;

}

return sum;

}

void main()

{ int n;

printf("Enter the number to reverse");

scanf("%d",&n);

printf("The reverse of the number n is %d",reverse(&n));

}

**Output:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 2.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the number to reverse 32560

The reverse of the number n is 6523

**3.)Program name: a floating number raised to an integer power.**

#include<stdio.h>

float power(float x,int n)

{ if(n==0)

return 1;

else

return(x\*power(x,n-1));

}

void main()

{ float x;

int n;

printf("Enter the number ");

scanf("%f",&x);

printf("Enter the power ");

scanf("%d",&n);

if(n>=0)

printf("The answer is %f",power(x,n));

else

printf("The answer is %f",(1/power(x,(-n))));

}

**Output:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the number 15.089

Enter the power 3

The answer is 1435.432149

**4.) Program name: products of n floating numbers using recursion.**

#include<stdio.h>

float product(float x,int n)

{if(n==0)

return 1;

else

scanf("%f",&x);

return(x\*product(x,n-1));

}

void main()

{ int n;

printf("Enter the no of floating point numbers");

scanf("%d",&n);

printf("Enter the numbers");

float x;

float y=product(x,n);

printf("The product is %f",y);

}

**Outputs:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 4.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the no of floating point numbers 4

Enter the numbers

4.56

1.21

2

9.08

The product is 100.199616

**5.) Program name**: **recursive function that reads N and prints from N to 0**.

#include<stdio.h>

void print(int n)

{ if(n==0)

printf("%d",n);

else

{ printf("%d",n);

print(n-1); }

}

void main()

{ int n;

printf("Enter the number");

scanf("%d",&n);

print(n-1);

}

**Outputs:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 5.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the number 10

9876543210

**6.) Program name: rightmost non-zero digit of *n factorial.***

#include<stdio.h>

int lastd(int n)

{ int r;

if(n<=10)

{ int f=1;

for(int i=n; i>=1; i--)

f=f\*i;

r=f%10;

while(r==0)

{ f=f/10;

r=f%10;

}

return r;

}

else

{ int a=n;

a=a/10;

int r=a%10;

if(r%2==0)

return (6\*lastd(n/5)\*lastd(n%10));

else

return (4\*lastd(n/5)\*lastd(n%10));

}

}

void main()

{ int n;

printf("Enter the number");

scanf("%d",&n);

printf("The last nonzero digit of %d ! is %d",n,lastd(n)%10);

}

**Output:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 6.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

Enter the number 79

The last nonzero digit of 79! is 3

**7.) Program name: tic-tac-toe against the computer.**

#include<stdio.h>

#include<stdlib.h>

void main()

{int flag=0,i,j,k,u=0,c=0,i1,i2,i3,i4,i5,i6,i7,i8,i9,e=0;

char a1='1',a2='2',a3='3',a4='4',a5='5',a6='6',a7='7',a8='8',a9='9';

while((flag==0)&&(e<4))

{e++;

if(a1<58)

{i1=a1-48;

}else

{i1=a1;

}if(a2<58)

{i2=a2-48;

}else

{i2=a2;

}if(a3<58)

{i3=a3-48;

}else

{i

3=a3;

}if(a4<58)

{i4=a4-48;

}else

{i4=a4;

}

if(a5<58)

{i

5=a5-48;

}else

{i5=a5;

}if(a6<58)

{i6=a6-48;

}else

{i6=a6;

}if(a7<58)

{i7=a7-48;

}else

{i7=a7;

}if(a8<58)

{i8=a8-48;

}else

{i8=a8;

}if(a9<58)

{i9=a9-48;

}else

{i9=a9;

}

printf("enter one of the available numbers");

printf("\n %c | %c | %c \n",a1,a2,a3);

printf("\_\_\_\_\_\_\_\_\_\_\_\_\_\n");

printf(" %c | %c | %c \n",a4,a5,a6);

printf("\_\_\_\_\_\_\_\_\_\_\_\_\_\n");

printf(" %c | %c | %c \n",a7,a8,a9);

scanf("%d",&k);

if(k==i1)

{

a1='O';

}else if(k==i2)

{

a2='O';

}else if(k==i3)

{

a3='O';

}else if(k==i4)

{

a4='O';

}else if(k==i5)

{

a5='O';

}else if(k==i6)

{

a6='O';

}else if(k==i7)

{

a7='O';

}else if(k==i8)

{

a8='O';

}else if(k==i9)

{ a9='O';

}

if(a1<58)

{i1=a1-48;

}else

{i1=a1;

}if(a2<58)

{i2=a2-48;

}

else

{i2=a2;

}if(a3<58)

{i3=a3-48;

}else

{i3=a3;

}if(a4<58)

{i4=a4-48;

}else

{i4=a4;

}if(a5<58)

{i5=a5-48;

}else

{i5=a5;

}if(a6<58)

{i6=a6-48;

}else

{i6=a6;

}if(a7<58)

{i7=a7-48;

}else

{i7=a7;

}i

f(a8<58)

{i8=a8-48;

}else

{i8=a8;

}if(a9<58)

{i9=a9-48;

}else

{i9=a9;

}

int q=0,y;

while(q==0)

{

y=(rand()%9+1);

if(y==i1)

{ a1=='X';

q=1;

}else if(y==i2)

{

a2='X';

q=1;

}else if(y==i3)

{

a3='X';

q=1;

}else if(y==i4)

{

a4='X';

q=1;

}else if(y==i5)

{

a5='X';

q=1;

}else if(y==i6)

{

a6='X';

q=1;

}else if(y==i7)

{

a7='X';

q=1;

}else if(y==i8)

{

a8='X';

q=1;

}else if(y==i9)

{

a9='X';

q=1;

}e

lse

{

continue;

}}

if(((a1=='O')&&(a2=='O')&&(a3=='O')))

{

u=1;

flag=1;

}else if(((a4=='O')&&(a5=='O')&&(a6=='O')))

{

u=1;

flag=1;

}else if(((a7=='O')&&(a8=='O')&&(a9=='O')))

{

u=1;

flag=1;

}else if(((a1=='O')&&(a4=='O')&&(a7=='O')))

{

u=1;

flag=1;

}else if(((a2=='O')&&(a5=='O')&&(a8=='O')))

{

u=1;

flag=1;

}else if(((a3=='O')&&(a6=='O')&&(a9=='O')))

{

u=1;

flag=1;

}else if(((a1=='O')&&(a5=='O')&&(a9=='O')))

{

u=1;

flag=1;

}else if(((a3=='O')&&(a5=='O')&&(a7=='O')))

{

u=1;

flag=1;

}else if(((a1=='X')&&(a2=='X')&&(a3=='X')))

{

c=1;

flag=1;

}else if(((a4=='X')&&(a5=='X')&&(a6=='X')))

{

c=1;

flag=1;

}else if(((a7=='X')&&(a8=='X')&&(a9=='X')))

{

c=1;

flag=1;

}else if(((a1=='X')&&(a4=='X')&&(a7=='X')))

{

c=1;

flag=1;

}else if(((a2=='X')&&(a5=='X')&&(a8=='X')))

{

c=1;

flag=1;

}else if(((a3=='X')&&(a6=='X')&&(a9=='X')))

{

c=1;

flag=1;

}else if(((a1=='X')&&(a5=='X')&&(a9=='X')))

{

c=1;

flag=1;

}else if(((a3=='X')&&(a5=='X')&&(a7=='X')))

{

c=1;

flag=1;

}else

{continue;

}}

printf("\n %c | %c | %c \n",a1,a2,a3);

printf("\_\_\_\_\_\_\_\_\_\_\_\_\_\n");

printf(" %c | %c | %c \n",a4,a5,a6);

printf("\_\_\_\_\_\_\_\_\_\_\_\_\_\n");

printf(" %c | %c | %c \n",a7,a8,a9);

if(c==1)

{

printf("computer is the winner");

}else if(u==1)

{

printf("user is the winner");

}

}

**OUTPUT:**

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ gcc 7.c

cseb80@jtl12-HP-285-Pro-G2-MT:~/Assignment2$ ./a.out

enter one of the available numbers

1 | 2 | 3

\_\_\_\_\_\_\_

4 | 5 | 6

\_\_\_\_\_\_\_

7 | 8 | 9

1

enter one of the available numbers

O | X | 3

\_\_\_\_\_\_\_\_

4 | 5 | 6

\_\_\_\_\_\_\_\_

7 | 8 | 9

5

enter one of the available numbers

O | X | 3

\_\_\_\_\_\_\_\_

4 | O | 6

\_\_\_\_\_\_\_\_

7 | X | 9

9

user is the winner

O | X | 3

\_\_\_\_\_\_\_

4 | O | X

\_\_\_\_\_\_\_

7 | X | O