**SSN COLLEGE OF ENGINEERING (Autonomous)**

**Affiliated to Anna University**

**DEPARTMENT OF CSE**

**UCS 1211 PROGRAMMING IN C LABORATORY A1 : Simple C Programs using I/O statements, conditional and looping constructs**

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**1) Check whether the given integer is odd or even:**

#include<stdio.h>

void main()

{

int a;

printf("Enter the number:\n");

scanf("%d",&a);

if(a%2==0)

{

printf("Even\n");

}

else

{

printf("Odd\n");

}

}

**Output**1:

cseb112@jtl-10:gcc ass11.c –o ass11

cseb112@jtl-10:./ass11

Enter the number:

45

Odd

Output2:

cseb112@jtl-10:gcc ass11.c –o ass11

cseb112@jtl-10:./ass11

Enter the number:

4

Even

**2) Convert the given temperature in Celsius to Fahrenheit and Kelvin scale**

#include<stdio.h>

void main()

{

float c,f,k;

printf("Enter the temperature in celsius:\n");

scanf("%f",&c);

f=(c\*(9.0/5.0))+32;

k=c+273;

printf("Temperature in farenheit is %f\n",f);

printf("Temperature in kelvin is %f\n",k);

}

Output:

cseb112@jtl-10:gcc ass12.c –o ass12

cseb112@jtl-10:./ass12

Enter the temperature in celsius:

30

Temperature in farenheit is 89.000000

Temperature in kelvin is 303.000000

**3) Modify (1) to set a flag to 1 if number is odd; 0 if even (Use conditional operator)**

#include<stdio.h>

void main()

{

int a,flag;

printf("Enter the number:\n");

scanf("%d",&a);

flag=(a%2==0)?0:1;

if(flag==0)

{

printf("Even\n");

}

else

{

printf("Odd\n");

}

printf("flag = %d\n",flag);

}

Output1:

cseb112@jtl-10:gcc ass13.c –o ass13

cseb112@jtl-10:./ass13

Enter the number:

55

Odd

flag = 1

Output2:

cseb112@jtl-10:gcc ass13.c –o ass13

cseb112@jtl-10:./ass13

Enter the number:

2

Even

flag = 0

**4) Find the net salary of an employee by getting the basic pay (BP) as input**

#include<stdio.h>

void main()

{

float bp,da,hra,pf,gross,deduction,netpay;

int insurance=2000,cca=1000;

printf("Enter the basic pay in Rs. ");

scanf("%f",&bp);

da=0.88\*bp;

hra=0.08\*bp;

pf=0.1\*bp;

gross=bp+da+hra+cca;

deduction=insurance+pf;

netpay=gross-deduction;

printf("Gross pay = %f\n",gross);

printf("Net pay = %f\n",netpay);

}

Output:

cseb112@jtl-10:gcc ass14.c –o ass14

cseb112@jtl-10:./ass14

Enter the basic pay in Rs. 10000

Gross pay = 20600.000000

Net pay = 17600.000000

**5) Modify (4) to set HRA based on type city which is input (Metro 10%; Corporation 8%; Taluk 5%); to set CCA based on designation (Worker (W) 1000; Engineer (E) 2000; Manager (M) 5000) (Use case / nested if)**

#include<stdio.h>

void main()

{

float bp,da,hra,pf,gross,deduction,netpay;

int insurance=2000,cca;

char city,designation;

printf("Enter the basic pay in Rs. ");

scanf("%f",&bp);

printf("Enter the type of city as\nM for Metro\nC for Corporation\nT for Taluk\n");

scanf(" %c",&city);

switch(city)

{

case 'M':

hra=0.1\*hra;

break;

case 'C':

hra=0.08\*hra;

break;

case 'T':

hra=0.05\*hra;

break;

default:

printf("Invalid input\n");

}

printf("Enter the type of Designation as\nW for worker\nE for Engineer\nM for manager\n");

scanf(" %c",&designation);

switch(designation)

{

case 'W':

cca=1000;

break;

case 'E':

cca=2000;

break;

case 'M':

cca=5000;

break;

default:

printf("Invalid input\n");

}

da=0.88\*bp;

pf=0.01\*bp;

gross=bp+da+hra+cca;

deduction=insurance+pf;

netpay=gross-deduction;

printf("Gross pay = %f\n",gross);

printf("Net pay = %f\n",netpay);

}

Output:

cseb112@jtl-10:gcc ass15.c –o ass15

cseb112@jtl-10:./ass15

Enter the basic pay in Rs. 10000

Enter the type of city as

M for Metro

C for Corporation

T for Taluk

M

Enter the type of Designation as

W for worker

E for Engineer

M for manager

M

Gross pay = 23800.000000

Net pay = 21700.000000

**6) Write a C program that will ask the user for a whole number N between 3 and 10 and print an egg timer of size N. Validate N to be non-zero positive number.**

#include<stdio.h>

void main()

{

int i,j,n,flag=1;

while(flag)

{

printf("Enter the number between 3 and 10:\n");

scanf("%d",&n);

if(n>=3 && n<=10)

{

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

{

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

{

printf(" ");

}

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

{

printf("\*");

if(j<n)

{

printf("\_");

}

}

printf("\n");

}

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

{

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

{

printf(" ");

}

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

{

printf("\*");

if(j<i)

{

printf("-");

}

}

printf("\n");

}

flag=0;

}

else

{

printf("Invalid input:\n");

}

}

}

Output:

cseb112@jtl-10:gcc ass16.c –o ass16

cseb112@jtl-10:./ass16

Enter the number between 3 and 10:

4

\*\_\*\_\*\_\*

\*\_\*\_\*

\*\_\*

\*

\*-\*

\*-\*-\*

\*-\*-\*-\*

**7) Write a program that computes sum of N integers (Version 1)**

void main()

{

int i=1,n,a,sum=0;

printf("Enter the no. of terms:\n");

scanf("%d",&n);

printf("Enter the number:\n");

do

{

scanf("%d",&a);

sum+=a;

i++;

}while(i<=n);

printf("Sum = %d\n",sum);

}

Output:

cseb112@jtl-10:gcc ass171.c –o ass171

cseb112@jtl-10:./ass171

Enter the no. of terms:

3

Enter the number:

5

4

3

Sum = 12

**a. Get inputs for N, multiple times until -999 is given (Version 2) (Use do-while**)

#include<stdio.h>

void main()

{

int a=0,sum=0;

printf("Enter the numbers.Enter -999 to stop:\n");

do

{

sum+=a;

scanf("%d",&a);

}while(a!=-999);

printf("Sum = %d\n",sum);

}

Output:

cseb112@jtl-10:gcc ass172.c –o ass172

cseb112@jtl-10:./ass172

Enter the numbers.Enter -999 to stop:

4

5

6

-999

Sum = 15

**b. Get inputs for N, multiple times until ‘STOP’ is given (Version 3)**

void main()

{

int a=0,sum=0;

char ch;

do

{

printf("Enter the number:\n");

scanf("%d",&a);

sum+=a;

printf("Do you want to continue?(y/n)\n");

scanf(" %c",&ch);

}while(ch!='n');

printf("Sum = %d\n",sum);

}

Output:

cseb112@jtl-10:gcc ass173.c –o ass173

cseb112@jtl-10:./ass173

Enter the number:

3

Do you want to continue?(y/n)

y

Enter the number:

5

Do you want to continue?(y/n)

y

Enter the number:

6

Do you want to continue?(y/n)

n

Sum = 14

**c. Validate N to be a positive number less that 100. (Version 4)**

#include<stdio.h>

void main()

{

int a=0,sum=0;

char ch;

do

{

printf("Enter the number:\n");

scanf("%d",&a);

if(a>0 && a<=100)

sum+=a;

printf("Do you want to continue?(y/n)\n");

scanf(" %c",&ch);

}while(ch!='n');

printf("Sum = %d\n",sum);

}

Output:

cseb112@jtl-10:gcc ass174.c –o ass174

cseb112@jtl-10:./ass174

Enter the number:

-90

Do you want to continue?(y/n)

y

Enter the number:

5

Do you want to continue?(y/n)

y

Enter the number:

2

Do you want to continue?(y/n)

y

Enter the number:

3

Do you want to continue?(y/n)

101

Enter the number:

Do you want to continue?(y/n)

n

Sum = 10

**d. Print error message for invalid input and exit (Version 5) (Use break)**

#include<stdio.h>

void main()

{

int a=0,sum=0;

char ch;

do

{

printf("Enter the number:\n");

scanf("%d",&a);

if(a>0 && a<=100)

sum+=a;

else

{

printf("Invalid input:\n");

break;

}

printf("Do you want to continue?(y/n)\n");

scanf(" %c",&ch);

}while(ch!='n');

printf("Sum = %d\n",sum);

}

Output:

cseb112@jtl-10:gcc ass175.c –o ass175

cseb112@jtl-10:./ass175

Enter the number:

12

Do you want to continue?(y/n)

y

Enter the number:

8

Do you want to continue?(y/n)

y

Enter the number:

101

Invalid input:

Sum = 20

**e. If input is invalid, print message and ask for another input. (Version 6)**

#include<stdio.h>

void main()

{

int a=0,sum=0;

char ch;

do

{

again:

printf("Enter the number:\n");

scanf("%d",&a);

if(a>0 && a<=100)

sum+=a;

else

{

printf("Invalid input:\n");

goto again;

}

printf("Do you want to continue?(y/n)\n");

scanf(" %c",&ch);

}while(ch!='n');

printf("Sum = %d\n",sum);

}

Output

cseb112@jtl-10:gcc ass176.c –o ass176

cseb112@jtl-10:./ass176

Enter the number:

5

Do you want to continue?(y/n)

y

Enter the number:

-2

Invalid input:

Enter the number:

10

Do you want to continue?(y/n)

y

Enter the number:

5

Do you want to continue?(y/n)

n

Sum = 20

**8) Design a calculator to perform the operations namely addition, subtraction, multiplication, division and square of a number. (Hint: Provide operation options for the user to choose, after getting two numbers of type float) (Use case)**

#include<stdio.h>

void main()

{

float a,b;

char op;

printf("Enter the numbers:\n");

scanf("%f %f",&a,&b);

printf("Enter the operation as +,-,\*,/,2:\n");

scanf(" %c",&op);

switch(op)

{

case '+':

printf("sum = %f\n",a+b);

break;

case '-':

printf("difference = %f\n",a-b);

break;

case '\*':

printf("product = %f\n",a\*b);

break;

case '/':

printf("quotient = %f\n",a/b);

break;

case '2':

printf("%f square = %f\n",a,a\*a);

printf("%f square = %f\n",b,b\*b);

break;

default:

printf("Invalid input\n");

}

}

Output1:

cseb112@jtl-10:gcc ass18.c –o ass18

cseb112@jtl-10:./ass18

Enter the numbers:

2

3

Enter the operation as +,-,\*,/,2:

+

sum = 5.000000

Output2:

cseb112@jtl-10:gcc ass18.c –o ass18

cseb112@jtl-10:./ass18

Enter the numbers:

2

3

Enter the operation as +,-,\*,/,2:

-

difference = -1.000000

Output3:

cseb112@jtl-10:gcc ass18.c –o ass18

cseb112@jtl-10:./ass18

Enter the numbers:

2

3

Enter the operation as +,-,\*,/,2:

\*

product = 6.000000

Output4:

cseb112@jtl-10:gcc ass18.c –o ass18

cseb112@jtl-10:./ass18

Enter the numbers:

2

3

Enter the operation as +,-,\*,/,2:

/

quotient = 0.666667

Output5:

cseb112@jtl-10:gcc ass18.c –o ass18

cseb112@jtl-10:./ass18

Enter the numbers:

4

3

Enter the operation as +,-,\*,/,2:

2

4.000000 square = 16.000000

3.000000 square = 9.000000

**9) Write a C program to check if a number has three consecutive 5s. If yes, print YES, else print NO.**

#include<stdio.h>

void main()

{

int a,r,flag,count=0;

printf("Enter a number: ");

scanf("%d",&a);

while(a!=0)

{

r=a%10;

if (r==5)

{

count++;

if(count==3)

{

printf("Yes\n");

break;

}

}

else

{

count=0;

}

a=a/10;

}

if(count!=3)

{

printf("No\n");

}

}

Output1:

cseb112@jtl-10:gcc ass19.c –o ass19

cseb112@jtl-10:./ass19

Enter a number: 1353554

No

Output2:

cseb112@jtl-10:gcc ass19.c –o ass19

cseb112@jtl-10:./ass19

Enter a number: 1375558

Yes

**10) Implement the solution for (1) without a condition?!**

#include<stdio.h>

void main()

{

int a;

printf("Enter the number: ");

scanf("%d",&a);

(a & 1 && printf("Odd\n")) || printf("Even\n");

}

Output1:

cseb112@jtl-10:gcc ass110.c –o ass110

cseb112@jtl-10:./ass110

Enter the number: 2

Even

Output2:

cseb112@jtl-10:gcc ass110.c –o ass110

cseb112@jtl-10:./ass110

Enter the number: 5

Odd