**SSN COLLEGE OF ENGINEERING (Autonomous)**

**Affiliated to Anna University**

**DEPARTMENT OF CSE**

**UCS 1211 PROGRAMMING IN C LABORATORY**

**Assignment1 : Simple C Programs using I/O statements, conditional and looping Constructs**

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

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1. Check whether the given integer is odd or even

**PROGRAM:**

#include<stdio.h>

void main()

{

int num;

printf("Enter a number:");

scanf("%d",&num);

if (num%2==0)

printf("The given number is even");

else

printf("The given number is odd");

printf("\n");

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall oddeven.c -o oddeven

cseb121@jtl-19:~$ ./oddeven

Enter a number:3

the given number is odd

cseb121@jtl-19:~$ ./ oddeven

Enter a number: 4

The given number is even

1. **Convert the given temperature in Celsius to Fahrenheit and Kelvin scale**

**PROGRAM:**

#include<stdio.h>

int main()

{

float cel,fah,kel;

printf("Enter celcius value: ");

scanf("%f",&cel);

fah=(cel\*9)/5+32;

kel=cel+273.15;

printf("The fahrenheit is %f \n",fah);

printf("The kelvin is %f \n",kel);

return 0;

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall celsius.c -o celsius

cseb121@jtl-19:~$ ./ celsius

Enter celcius value: 35

The farenhiet is 95.000000

The kelvin is 308.150000

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int num,flag;

printf("Enter a number:");

scanf("%d",&num);

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

if(flag==0)

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

else

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

printf("\n");

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall oddevenflag.c -o oddevenflag

cseb121@jtl-19:~$ ./ oddevenflag

Enter a number: 3

3 is odd and flag=1

cseb121@jtl-19:~$ ./oddevenflag

Enter a number: 4

4 is odd and flag=0

**4) Find the net salary of an employee by getting the basic pay (BP) as input. Compute the net pay based upon the following formulae: DA = 88% of BP HRA = 8% of BP CCA = Rs. 1000 Insurance = Rs. 2000 PF = 10% of BP Gross Pay = BP + DA + HRA + CCA Deductions = Insurance + PF Net Pay = Gross Pay – Deductions**

**PROGRAM:**

#include<stdio.h>

int main()

{

int bp,emp\_id;

float da,hra,cca,insurance,pf,gross,dedu,netsal;

char name[20];

printf("enter ur name:");

scanf("%s",name);

printf("enter the employee id:");

scanf("%d",&emp\_id);

printf("enter bp:");

scanf("%d",&bp);

da=0.88\*bp;

hra=0.08\*bp;

cca=1000;

insurance=2000;

pf=0.12\*bp;

gross=bp+da+hra+cca;

dedu=insurance+pf;

netsal=gross-dedu;

printf("name%7c%s",':',name);

printf("\nEmployeeid:%d",emp\_id);

printf("\nBP%9c%d",':',bp);

printf("\nDA%9c%f",':',da);

printf("\nHRA%8c%f",':',hra);

printf("\nCCA%8c%f",':',cca);

printf("\nInsurance%2c%f",':',insurance);

printf("\nGross\_Pay%2c%f",':',gross);

printf("\nDeduction%2c%f",':',dedu);

printf("\n");

printf("%10cNet\_Pay:%f",' ',netsal);

printf("\n");

return 0;

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall netpay.c -o netpay

cseb121@jtl-19:~$ ./netpay

enter ur name:RAHUL

enter the employee id:185001121

enter bp:45000

name :RAHUL

Employeeid:185001121

BP :45000

DA :39600.000000

HRA :3600.000000

CCA :1000.000000

Insurance :2000.000000

Gross\_Pay :89200.000000

Deduction :7400.000000

Net\_Pay:81800.000000

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

**PROGRAM:**

#include<stdio.h>

void main()

{

float bp,da,hra,cca,ins,pf,gp,dedu,netpay;

char hratype,ccatype;

printf("Enter the basic pay amount:");

scanf("%f",&bp);

printf("enter the option as m or c or t:");

scanf(" %c",& hratype);

switch(hratype)

{

case 'm':hra=0.1\*bp;break;

case 'c':hra=0.08\*bp;break;

default:hra=0.05\*bp;

}

printf("\n");

printf("enter the option as w or e or m:");

scanf(" %c",&ccatype);

switch(ccatype)

{

case 'w':cca=1000;break;

case 'e':cca=2000;break;

default:cca=5000;

}

da=0.88\*bp;

pf=0.1\*bp;

ins=1000;

gp=bp+da+hra+cca;

dedu=ins+pf;

netpay=gp-dedu;

printf("DA:%f",da);

printf("\n");

printf("PF:%f",pf);

printf("\n");

printf("Gross\_Pay:%f",gp);

printf("\n");

printf("Deduction:%f",dedu);

printf("\n");

printf("NetPay:%f",netpay);

printf("\n");

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall netpay2.c -o netpay2

cseb121@jtl-19:~$ ./netpay2

Enter the basic pay amount:45000

enter the option as m or c or t:m

enter the option as w or e or m:e

DA:39600.000000

PF:4500.000000

Gross\_Pay:91100.000000

Deduction:5500.000000

NetPay:85600.000000

cseb121@jtl-19:~$ ./netpay2

Enter the basic pay amount:45000

enter the option as m or c or t:t

enter the option as w or e or m:m

DA:39600.000000

PF:4500.000000

Gross\_Pay:91850.000000

Deduction:5500.000000

Net\_Pay:86350.000000

**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.

Example: Enter a number ? 4

**\*-\*-\*-\***

**\*-\*-\***

**\*-\***

**\***

**\*-\***

**\*-\*-\***

**\*-\*-\*-\***

**PROGRAM:**

#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:**

cseb121@jtl-19:~$ gcc -Wall eggtimer.c -o eggtimer

cseb121@jtl-19:~$ ./eggtimer

Enter the number between 3 and 10:

4

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

\*\_\*\_\*

\*\_\*

\*

\*-\*

\*-\*-\*

\*-\*-\*-\*

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

**PROGRAM:**

#include<stdio.h>

void main()

{

Int N,n,i,sum=0;

printf("Enter a number:");

scanf("%d",&N);

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

{

printf("Enter the %dth number",i+1);

scanf("%d",&n);

sum=sum+n;

}

printf("The sum of %d number is :%d\n",N,sum);

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum1.c -o sum1

cseb121@jtl-19:~$ ./sum1

Enter a number:4

Enter the 1th number1

Enter the 2th number2

Enter the 3th number3

Enter the 4th number4

The sum of 4 number is :10

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

**PROGRAM:**

#include<stdio.h>

int main()

{ int n,s=0;

printf("\nEnter number:");

scanf("%d",&n);

do

{ s+=n;

printf("\nEnter number:");

scanf("%d",&n);

}while(n!=-999);

printf("Sum: %d",s);

return 0;

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum2.c -o sum2

cseb121@jtl-19:~$ ./sum2

Enter number:4

Enter number:5

Enter number:43

Enter number:5

Enter number:-999

Sum: 57

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

**PROGRAM:**

#include<stdio.h>

int main()

{ int n,s=0;

char ch='y';

while(ch!='n')

{ printf("\nEnter number:");

scanf("%d",&n);

s+=n;

printf("\nEnter ch:");

scanf(" %c",&ch);

}

printf("Sum: %d",s);

return 0;

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum3.c -o sum3

cseb121@jtl-19:~$ ./sum3

Enter number:5

Enter ch:y

Enter number:4

Enter ch:y

Enter number:6

Enter ch:y

Enter number:7

Enter ch:n

Sum: 22

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

**PROGRAM:**

#include<stdio.h>

int main()

{

int N,n,s=0,i;

printf("Enter the number of integers: ");

scanf("%d",&N);

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

{

printf("Enter a integer:\n");

scanf("%d",&n);

if (n>0&&n<100)

s+=n;

else

s+=0;

}

printf("the sum is %d\n",s);

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum4.c -o sum4

cseb121@jtl-19:~$ ./sum4

Enter the number of integers: 5

Enter a integer:3

Enter a integer:4

Enter a integer:567

Enter a integer:4

Enter a integer:-1

the sum is 11

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

**PROGRAM:**

#include<stdio.h>

int main()

{

int N,n,s=0,i;

printf("Enter the number of integers: ");

scanf("%d",&N);

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

{

printf("Enter a integer:\n");

scanf("%d",&n);

if (n>0&&n<100)

s+=n;

else

break;

}

if (n>0&&n<100)

printf("the sum is %d\n",s);

else

printf("Invalid input\n");

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum5.c -o sum5

cseb121@jtl-19:~$ ./ sum5

Enter the number of integers: 4

Enter a integer:

3

Enter a integer:

4

Enter a integer:

5

Enter a integer:

6

the sum is 18

cseb121@jtl-19:~$ ./ sum5

Enter the number of integers: 4

Enter a integer:

3

Enter a integer:

-9

Invalid input

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

**PROGRAM:**

#include<stdio.h>

int main()

{

int N,n,s=0,i;

printf("Enter the number of integers: ");

scanf("%d",&N);

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

{

printf("Enter a integer:\n");

scanf("%d",&n);

if (n>0&&n<100)

s+=n;

else

printf("Invalid input,Enter another input.\n");

}

printf("the sum is %d\n",s);

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall sum6.c -o sum6

cseb121@jtl-19:~$ ./ sum6

Enter the number of integers: 5

Enter a integer:

4

Enter a integer:

5

Enter a integer:

456

Invalid input,Enter another input.

Enter a integer:

5

Enter a integer:

6

the sum is 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)**

**PROGRAM:**

#include<stdio.h>

int main()

{

float a,b;

char op;

printf("Enter a number,operator,another number: ");

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

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'^':

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

break;

default:

printf("Operator is invalid");

}

return 0;

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall calci.c -o calci

cseb121@jtl-19:~$ ./calci

Enter a number,operator,another number: 4 + 6

Sum=10.000000

cseb121@jtl-19:~$ ./calci

Enter a number,operator,another number: 5 - 4

Difference=1.000000

cseb121@jtl-19:~$ ./calci

Enter a number,operator,another number: 4 \* 5

product=20.000000

cseb121@jtl-19:~$ ./calci

Enter a number,operator,another number: 10 /5

Quotient=2.000000

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int num,c=0;

printf("Enter a number: ");

scanf("%d",&num);

while(num>0)

{

if(num%10==5)

{

c+=1;

}

else

{

c=0;

}

num/=10;

if(c==3)

{

break;

}

}

if (c==3)

{

printf("Yes\n");

}

else

{

printf("no\n");

}

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall triple5.c -o triple5

cseb121@jtl-19:~$ ./triple5

Enter a number: 465556

Yes

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

**PROGRAM:**

#include<stdio.h>

void main()

{

int n;

printf("Enter a number: ");

scanf("%d",&n);

(num%2&&printf("ODD"))||printf("EVEN");

}

**OUTPUT:**

cseb121@jtl-19:~$ gcc -Wall oddevenop.c -o oddevenop

cseb121@jtl-19:~$ ./oddevenop

Enter a number: 5

ODD

cseb121@jtl-19:~$ ./oddevenop

Enter a number: 4

EVEN