**Batch: C2-1 Roll No.: 16010122104**

**Experiment / assignment / tutorial No. 3**

**Grade: AA / AB / BB / BC / CC / CD /DD**

**Signature of the Staff In-charge with date**

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| **TITLE:**  Menu driven program. |

**AIM:** Write a menu driven program for following option

a.To find whether a number is palindrome or not. (e.g. 1221 is palindrome) using while loop

b. To calculate the sum of the Fibonacci series up to ‘n’ terms(use do-while loop only)

c. To find the numbers and sum of all integer between 100 and 200 which are divisible by both 3 & 5(use for loop only)

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**Expected OUTCOME of Experiment:**

To successfully run a menu-driven program with the above cases.

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**Books/ Journals/ Websites referred:**

1. Programming in C, second edition, Pradeep Dey and Manas Ghosh, Oxford University Press.
2. Programming in ANSI C, fifth edition, E Balagurusamy, Tata McGraw Hill.
3. Introduction to programming and problem solving , G. Michael Schneider ,Wiley India edition.
4. [**http://cse.iitkgp.ac.in/~rkumar/pds-vlab/**](http://cse.iitkgp.ac.in/~rkumar/pds-vlab/)

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**Problem Definition:**

The program accepts a choice from the user using a switch case statement and generates output accordingly.

**Choice a**: The program checks whether a given numbered by user is palindrome or not.If a number remains same, even if we reverse its digits then the number is known as palindrome number. For example, 12321 is a palindrome number because it remains same if we reverse its digits.

**Choice b:** Sum of Fibonacci series up to n terms will be generated. Fibonacci series is a series in which each number is the sum of the last two preceding numbers. The first two terms of a Fibonacci series are 0 and 1.(use while loop only)

**Example:**

Input: n = 5

Output: 7

Explanation: 0 + 1 + 1 + 2 + 3 = 7

**Choice c:** To find the numbers and sum of all integer between 100 and 200 which are divisible by both 3 & 5.(use for loop only)

**#include<stdio.h>**

**void main ()**

**{**

**int k;**

**printf("Enter (1) TO FIND IF NUMBER IS PALINDROME OR NOT\n");**

**int num, temp, rem, rev = 0;**

**printf("Enter (2) TO FIND FIBONACCI SERIES\n");**

**int i=1,n,f,f1,f2;**

**printf("Enter (3) TO FIM SUM\n");**

**int j, sum=0;**

**scanf("%d", &k);**

**switch(k)**

**{**

**case 1:**

**printf("enter a number:");**

**scanf("%d", &num);**

**temp = num;**

**while ( temp > 0)**

**{**

**rem = temp %10;**

**rev = rev \*10+ rem;**

**temp = temp /10;**

**}**

**if ( num == rev )**

**printf("%d is Palindrome Number.", num);**

**else**

**printf("%d is not the Palindrome Number.", num);**

**break;**

**case 2:**

**printf("Enter Number of Fibonacci Values Needed : ");**

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

**f=0;**

**f1=1;**

**f2=1;**

**do**

**{**

**i++;**

**printf("%d\n",f);**

**f1=f2;**

**f2=f;**

**f=f1+f2;**

**}**

**while(i<=n);**

**break;**

**case 3:**

**printf("Numbers between 100 and 200, divisible by 3 and 5 : \n");**

**for(j=101; j<200; j++)**

**{**

**if(j%3==0 && j%5==0)**

**{**

**printf("% 5d",j);**

**sum+=j;**

**}**

**}**

**printf("\n\nThe sum : %d \n",sum);**

**break;**

**}**

**}**

**Flowchart:**

Diagram

Description automatically generated with low confidence

**Implementation details:**

1. Start
2. Declare k as switch case variable
3. Accept k from user
4. Declare all the necessary variables required for each case
5. If k=1, go to (7)
6. If k=2, go to (17)
7. If k=3, go to (29)
8. Initialize switch case
9. Case 1:
10. temp=num
11. while(temp>0)
12. rem = temp %10;
13. rev = rev \*10+ rem;
14. temp = temp /10;
15. If (num==rev)
16. Print palindrome or not
17. break
18. Case 2:
19. f=0;
20. f1=1;
21. f2=1;
22. do-while loop from i to n
23. i++;
24. print f
25. f1=f2;
26. f2=f;
27. f=f1+f2;
28. break
29. Case 3:
30. For loop from 100 to 200
31. Check if divisible by 3 and 5
32. Print i
33. Sum of divisible numbers
34. Print the sum
35. Break
36. Stop

**Output(s):**

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

**Conclusion:**

From this experiment, we learnt how to make use of choice statement – switch case,

control statements – for, do while, while loop.

**Post Lab Descriptive Questions**

**Write menu driven code for the following:**

The program allows a user to enter five numbers and then asks the user to select a choice from a menu. The menu should offer the following options –

1. Display the smallest number entered

2. Display the largest number entered

3. Display the sum of the five numbers entered

4. Display the average of the five numbers entered.

5. Exit

Ans.

#include <stdio.h>

void main()

{

int ch, arr[5], r = 0, i, s = sizeof(arr)/sizeof(arr[0]);

printf("Enter 5 numbers : \n");

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

scanf("%d", &arr[i]);

printf("\n\n1. Display the smallest number entered\n");

printf("2. Display the largest number entered\n");

printf("3. Display the sum of the five numbers entered\n");

printf("4. Display the average of the five numbers entered\n");

printf("5. Exit\n\n");

printf("Enter choice : ");

scanf("%d", &ch);

printf("\n");

switch(ch)

{

case 1 :

for (i=0;i<s-1;i++)

{

if(arr[i]>=arr[i+1])

r = arr[i];

}

printf("Smallest number entered is %d", r);

break;

case 2 :

for (i=0;i<s-1;i++)

{

if(arr[i]>=arr[i+1])

r = arr[i];

}

printf("Largest number entered is %d", r);

break;

case 3 :

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

r+=arr[i];

printf("Sum of 5 numbers entered is %d", r);

break;

case 4 :

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

r+=arr[i];

printf("Sum of 5 numbers entered is %d", (int)(r/s));

break;

case 5 :

exit(0);

default :

printf("Invalid Choice");

}

}

**Date: 07/01/2023 Signature of faculty in-charge**