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| **Ex.No.4** | **USAGE OF LOOP CONTROL STRUCTURES** | Reg.No: URK22CS1200 |
| **27/10/22** |

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| 1.Write a program to print all even numbers between 1 to N using for loop  **Aim:**  To write a code that prints all even numbers between 1 to N using for loop  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required variables i and n.  Step 3: input and accept value for n  Step 4: execute a suitable for loop with the appropriate conditions  Step 5: Display the even numbers from 1 to n  Step 6; Stop the program  **Program:**  #include<stdio.h>  int main()  {  int i,n;  printf("to print even nos till");  scanf("%d",&n);  for (i=2;i<=n;i+=2)  {printf("%d\n", i);  }  return 0;  }  **Output:**  **[urk22cs1200@code ~]$ gcc ex4a.c**  **[urk22cs1200@code ~]$ ./a.out**  **Print all even numbers:5**  **even number from 1 to 5:**  **2**  **4**  **[urk22cs1200@code ~]$**  **Result:**  This program is executed successfully and all even numbers between 1 to N using for loop  are printed. |

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| 2.Write a program to find the sum of odd numbers between 1 to n using while, do..while and for loop  **Aim:**  To write a code that finds the sum of odd numbers between 1 to n using while, do..while and for loop  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required 3 variables for each-while, do while and for loop  Step 3: Read the Inputted value till which the odd numbers sum has to be printed  Step 4: execute the while loop followed by the do while loop and finally the for loop  Step 5: Print the result using suitable print statements  Step 6: Stop the Program.  **Program:**  #include<stdio.h>  int main()  {  int s=0,n,i=1;  printf("enter the no u need");  scanf("%d", &n);  while(i<=n)  {  if (i%2==1)  {  s=s+i;  }  i++;  }  printf("sum of odd nos from 1 and %d is %d\n",n,s);  int num2,j=1,sum2=0;  printf("\n do while");  printf("enter limit");  scanf("%d",&num2);  do  {  if (j%2==1)  {  sum2=sum2+j;  }  j++;  }  while(j<=num2);  printf("sum of odd nos from 1 and %d is %d\n",num2,sum2);  int n3,k=1,s3=0;  printf("\n for loop");  printf("enter limit");  scanf("%d",&n3);  for(k=1;k<=n3;k+=2)  {  s3=s3+k;  }  printf("sum of odd nos from 1 and %d is %d\n",n3,s3);  return 0;  }  **Output:**  **WHILE LOOP-Sum of odd numbers from 1 to N**  **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***  **Enter till which number you need the sum:**  **4**  **The sum of odd numbers from 1 and 4 is:4**  **DO WHILE LOOP-Sum of odd numbers from 1 to**  **Enter the limit which number you need the sum:**  **4**  **The sum of odd numbers from 1 to 4 is:4**  **FOR LOOP-Sum of odd numbers from 1 to N**  **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***  **Enter a positive number**  **6**  **Sum of all odd numbers between 1 to 6 is 18[urk22cs1200@code ~]$**  **Result:**  This program is executed successfully and the sum of odd numbers between 1 to n using while, do..while and for loop has been displayed. |

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| 3.Write a program to find the product of n numbers.    **Aim:**  To find the product of n numbers.  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required variables i,n,p  Step 3: read inputted value for n (it shows how many numbers of which product is concerned)  Step 4: execute an appropriate for loop  Step 5: Display the result using a print statement  Step 6: Stop the Program.  **Program:**  #include<stdio.h>  int main()  {  int i,n,p=1;  printf("enter till which no u need product");  scanf("%d", &n);  for (i=1;i<=n;i=i+1)  {  printf("p\*i=%d\*%d=%d\n",p,i,p\*i);  p=p\*i;  printf("p=%d\n\n",p);  }  printf("prod=%d",p);  return 0;  }  **Output:**  **[urk22cs1200@code ~]$ ./a.out**  **Enter till which number you need the product:4**  **p\*i=1\*1=1**  **p=1**  **p\*i=1\*2=2**  **p=2**  **p\*i=2\*3=6**  **p=6**  **p\*i=6\*4=24**  **p=24**  **Product=24[urk22cs1200@code ~]$**  **Result:**  This program is executed successfully and the product of n numbers has been obtained. |

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| 4.Write a program to get a number from the user and check if it is a palindrome or not using while loop.  [urk22cs1200@code ~]$ gcc ex4d.c  [urk22cs1200@code ~]$ ./a.out  Enter an Interger515  515 is palindrome[urk22cs1200@code ~]$  **Aim:**  To get a number from the user and check if it is a palindrome or not using while loop.  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required variable n,r,re,o  Step 3: Read the Inputted value n which stands for the integer to be checked for palindromic status  Step 4: check for palindromicity using while and if-else  Step 5: Print the required output  Step 6: Stop the program  **Program:**  #include<stdio.h>  int main()  {  int n,r=0,re,o;  printf("enter integer");  scanf("%d",&n);  o=n;  while(n!=0)  {  re=n%10;  r=r\*10+re;  n=n/10;  }  if(o==r)  printf(" is palindrome", o);  else  {  printf(" is not a palindrome", o);  }  return 0;  }  **Output:**  **Result:**  This program is executed successfully and it checks if inputted integer is a palindrome or not using while loop. |

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| 5. Write a C program to print Fibonacci series upto n terms.  **Aim:**  To write a C program to print Fibonacci series upto n terms.  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required variables a,b,c,i,t  Step 3: Read the Input value for t (number of terms)  Step 4: give a,b,c suitable values and execute a suitable logic to print fibonacci sequence using a for loop  Step 5: Print the required output  Step 6: Stop the Program.  **Program:**  #include<stdio.h>  int main()  {  int a,b,c,i,t;  printf("enter no of terms");  scanf("%d",&t);  a=0;  b=1;  c=0;  printf("fibonacci terms\n");  for(i=1;i<=t;i++)  {  printf("%d\n",c);  a=b;  b=c;  c=a+b;  }  return 0;  }  **Output:**  [urk22cs1200@code ~]$ gcc ex4e.c  [urk22cs1200@code ~]$ ./a.out  enter number of terms:5  Fibonacci terms:  01123[urk22cs1200@code ~]$  **Result:**  This program is executed successfully and Fibonacci series upto n terms is printed. |

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| 6. Write a program to print a multiplication table for a given number and given range  **Aim:**  To print a multiplication table for a given number and given range  **Algorithm:**  Step 1: Start the program.  Step 2: Declare the required variables n,i,r  Step 3: Read the Input value for n which is the given number and r which is the given range  Step 4: write a suitable for loop in a suitable do while  Step 5: Print the required output  Step 6: Stop the Program.  **Program:**  #include<stdio.h>  int main()  {  int n,i,r;  printf("enter integer");  scanf("%d",&n);  do  {  printf("enter positive integral range:");  scanf("%d",&r);  }  while (r<=0);  for(i=1;i<=r;++i)  {  printf("%d\*%d=%d\n", n,i,n\*i);  }  return 0;  }  **Output:**  [urk22cs1200@code ~]$ ./a.out  Enter an integer:44  Enter the range(positive integer):  **Result:**  This program is executed successfully and a multiplication table for a given number and given range is printed. |