**Batch: A2 Roll No.: 16010121045**

**Experiment / assignment / tutorial No. 10**

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

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

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| **TITLE:**  Application Oriented Program |

**AIM:** To develop any application based program.

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**Expected OUTCOME of Experiment:**

**CO1.Formulate a problem statement and develop the logic (algorithm/flowchart) for its solution.**

**CO2. Apply basic concepts of C programming for problem solving.**

**CO3. Illustrate the use of derived and structured datatypes such as arrays, strings, structures and unions.**

**CO4. Design modular programs using functions and demonstrate the concept of pointers and file handling**

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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:**

Consider the marble rolling toy as shown in figure:



A marble is dropped at A or B. Levers x1,x2 and x3 cause the marble to fall either to the left or to the right. Whenever a marble encounters a lever, it causes the lever to reverse the direction after the marble passes, so the next marble will take the opposite branch. Write a C program to accept an input sequence and generate the appropriate output sequence. Example: input : “BAA” Its equivalent output sequence is “ CCD” i.e. three marbles are dropped sequentially at B, A and A. First marble will find its way through C, second through C and third through D.

**Flowchart:**



**Implementation details:**

#include<stdio.h>

int x1=0,x2=0,x3=0;

char ansx2()

{

 if(x2==0){

 x2=1;

 return 'C';}

 else

 x2=0;

 return 'D';

}

int main()

{

 char s[20];

 char ans[20];

 scanf("%s",s);

 for(int i=0;s[i]!='\0';i++){

 if(s[i]=='A'){

 if(x1==0){

 ans[i]='C';

 x1=1;}

 else{

 x1=0;

 ans[i]=ansx2();}}

 else

 if(x3!=0){

 ans[i]='D';

 x3=0;}

 else{

 x3=1;

 ans[i]=ansx2();}

 }

 printf("%s\n",ans);

 return 0;

}

**Output(s):**





**Conclusion:**

Successfully executed Experiment 10 based on application oriented program.

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Signature of faculty in-charge**