## 9. Write a program for TDM simulator. Show how the TDM technique works:

In TDM, the data flow of each input stream is divided into units. One unit may be 1 bit, 1 byte, or a block of few bytes. Each input unit is allotted an input time slot. One input unit corresponds to one output unit and is allotted an output time slot. During transmission, one unit of each of the input streams is allotted one-time slot, periodically, in a sequence, on a rotational basis. This system is popularly called round-robin system.

Example

Consider a system having four input streams, A, B, C and D. Each of the data streams is divided into units which are allocated time slots in the round – robin manner. Hence, the time slot 1 is allotted to A, slot 2 is allotted to B, slot 3 is allotted to C, slot 4 is allotted to D, slot 5 is allocated to A again, and this goes on till the data in all the streams are transmitted.
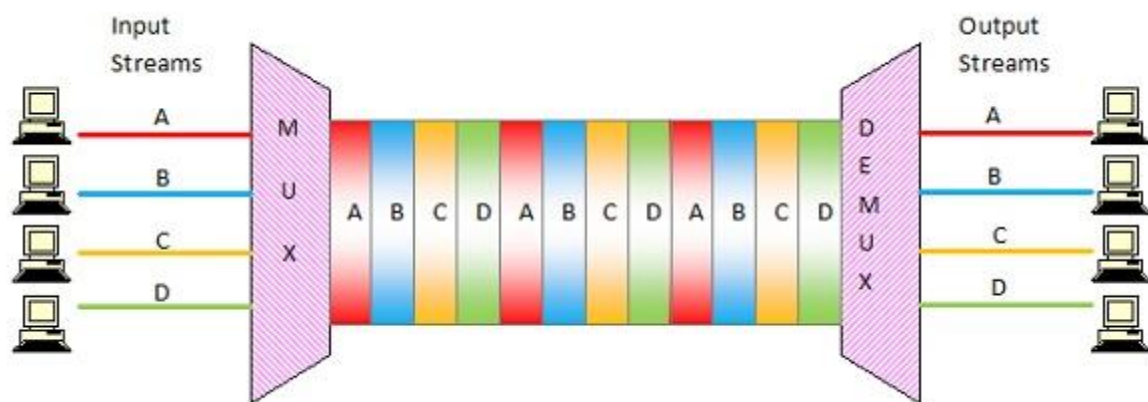
Program Code:

```java
import java.util.Scanner;

public class TDM
{
public static void main(String args[])
{
        int n,i,qt,count=0,temp,sq=0,bt[],wt[],tat[],rem_bt[];

        float awt=0,atat=0;

        bt = new int[10];

        wt = new int[10];

        tat = new int[10];

        rem_bt = new int[10];

        Scanner s=new Scanner(System.in);
```

```java
System.out.print("Enter the number of stations (maximum 10) = ");

n = s.nextInt();

System.out.print("Enter the processing time for each channel\n");

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

{

        System.out.print("S"+i+" = ");                        //stations Input

        bt[i] = s.nextInt();

        rem_bt[i] = bt[i];

}

System.out.print("Enter the frame size: ");                   // Frame size for each station

qt = s.nextInt();

while(true)

{

        for (i=0,count=0;i<n;i++)

        {

                temp = qt;

                if(rem_bt[i] == 0)

                {

                        count++;

                        continue;

                }

                if(rem_bt[i]>qt)

                        rem_bt[i]= rem_bt[i] - qt;

                else

                if(rem_bt[i]>=0)

                {

                        temp = rem_bt[i];

                        rem_bt[i] = 0;

                }

sq = sq + temp;

tat[i] = sq;
```

```
        }
        if(n == count)
        break;
        }
        System.out.print("----------------------------------------------------------------------------------");
        System.out.print("\nStation\t    Processing Time\t    Completion Time\t    Waiting
Time\n");
        System.out.print("----------------------------------------------------------------------------------");
        for(i=0;i<n;i++)
        {
                wt[i]=tat[i]-bt[i];
                awt=awt+wt[i];
                atat=atat+tat[i];
                System.out.print("\n \t"+(i+1)+"\t \t"+bt[i]+"\t\t "+tat[i]+"\t\t\t "+wt[i]+"\n");
        }


        }
}
```

OUTPUT:

Enter the number of stations (maximum 10) = 4

Enter the processing time for each channel

S0 = 4

S1 = 5

S2 = 3

S3 = 2

Enter the frame size: 2

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Station   Processing Time   Completion Time   Waiting Time

1	4	10	6
2	5	14	9
3	3	13	10
4	2	8	6