```
/*   ------------------- Abstract class ---------------*/

package fsa;

public abstract class FSA
{
      public static int counter =0;
      //global counter
      public String text;
                  // global text field
      FsaMachine fm;
      int currentstate=0;
      public abstract int CheckState(String text, FsaMachine fm);
}



      /* ------------------------ fsa.java------------------------------*/

package fsa;

public class FsaMachine //extends FSA
{
      FSA arrow;
      int currState;
      String text;

      public FsaMachine()
    {
            arrow = new StartState();           // assigning initial state
    }

      public void SetArrow(FSA a)
      {
         arrow = a;
      }

      // function to check the state input

    public  void CheckState(String t,FsaMachine fm)
      {
      this.text=t;
      currState= arrow.CheckState(text,fm);
      if(arrow != null)
            {
if(arrow.counter >= text.length()&& (currState == 4 || currState==5 || currState==6))
            System.out.println("Acceptable");
            else
            System.out.println("Not Acceptable");
             arrow =null;
            }

      }

}
```

```
                /* ------ main class -------- */

package fsa;

import java.util.Scanner;

public class StatePattern
{
	public static void main(String[] args)
	{
		// TODO Auto-generated method stub

		Scanner sc = new Scanner(System.in);
		FsaMachine object = new FsaMachine();
		FsaMachine object1 = new FsaMachine();
		System.out.println("enter the string");
		String text = sc.nextLine();
		 object.CheckState(text,object1);



	}
}

		/* --- ONE state and Start state of FSA machine --*/

package fsa;

public class StartState extends FSA
{

	@Override
	public int CheckState(String t , FsaMachine fm)
	{

		this.text=t;
		this.fm= fm;
		String s = text;
		currentstate=1;
		if(counter < text.length())   // length check of input string
		{
			char c = s.charAt(counter);
			counter ++;

			if(c == 'A' || c == 'a')
				{
					fm.SetArrow(new TwoState());
					fm.CheckState(text, fm);
				}

			else if(c == 'B' || c == 'b')
				{
					fm.CheckState(text, fm);

				}

			else if(c == 'C' || c == 'c')
				{
						fm.CheckState(text, fm);

				}
```

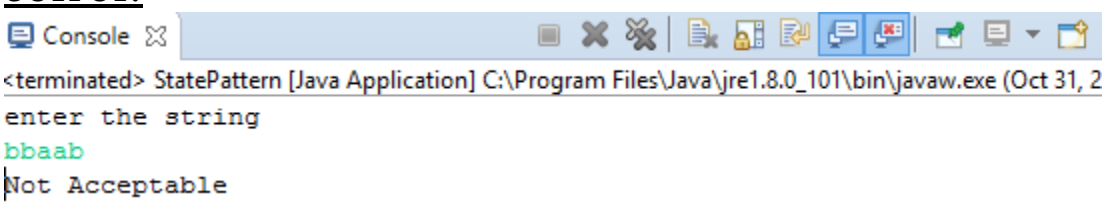
```
		}
	return currentstate;
	}
}


		/*---------- Two State---------- */

package fsa;

public class TwoState extends FSA {

	@Override
	public int CheckState(String t,FsaMachine fm )
	{
		this.text=t;
		this.fm= fm;
		String s = text;
		currentstate=2;
		if(counter < text.length())
		{
			char c = s.charAt(counter);
			counter ++;

			if(c == 'A' || c == 'a' )
				{

					fm.CheckState(text, fm);
				}


			else if(c == 'B' || c == 'b')
				{
					fm.SetArrow(new ThreeState());
					fm.CheckState(text, fm);

				}

			else if(c == 'C' || c == 'c')
				{
					fm.SetArrow(new StartState());
					fm.CheckState(text, fm);

				}
	  }
		return currentstate;

	}

}



		/* ---- three state --*/
	package fsa;

	public class ThreeState extends FSA
	{
		@Override
		public int CheckState(String t, FsaMachine fm)
		{
```

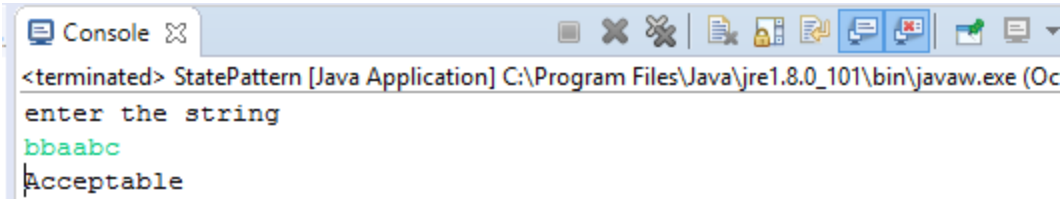
```
                this.text=t;
                this.fm= fm;
                String s = text;
                currentstate=3;
                if(counter < text.length())
                {
                      char c = s.charAt(counter);
                      counter++;

                      if(c == 'A' || c == 'a')
                            {
                                        fm.SetArrow(new TwoState());
                                        fm.CheckState(text, fm);
                            }

                      else if(c == 'B' || c == 'b')
                            {
                                        fm.SetArrow(new StartState());
                                        fm.CheckState(text, fm);

                            }

                      else if(c == 'C' || c == 'c')
                            {
                                    fm.SetArrow(new FourState());
                                    fm.CheckState(text, fm);

                            }
                      }
                      return currentstate;

            }

      }


                /*------- Four state------- */
package fsa;
public class FourState extends FSA
{
      @Override
      public int CheckState(String t, FsaMachine fm)
      {
            this.text=t;
            this.fm= fm;
            String s = text;
            currentstate=4;
            if(counter < text.length())
            {
                  char c = s.charAt(counter);
                  counter++;

                   if(c == 'A' || c == 'a')
                        {
                                fm.SetArrow(new FiveState());
                               fm.CheckState(text, fm);

                        }
                   else if(c == 'B' || c == 'b')
                        {
```

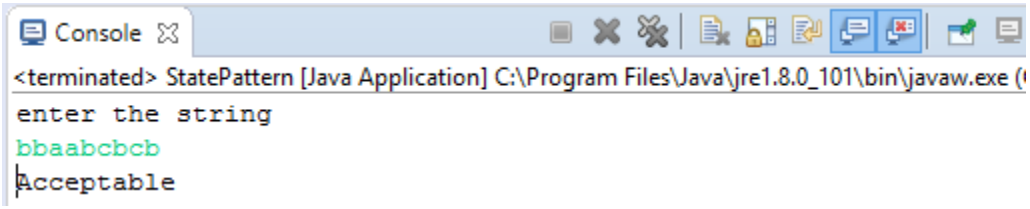
```
                                        fm.CheckState(text, fm);

                        }
                    else if(c == 'C' || c == 'c')
                        {

                              fm.CheckState(text, fm);

                        }
                  }

                  return currentstate;
      }

}
            /* ---------Five state----------*/

package fsa;

public class FiveState extends FSA
{
      public int CheckState(String t, FsaMachine fm)
      {

            this.text=t;
            this.fm= fm;
            String s = text;
            currentstate=5;
            if(counter < text.length())
            {
                  char c = s.charAt(counter);
                  counter++;

                  if(c == 'A' || c == 'a' )
                        {

                                    fm.CheckState(text, fm);

                        }

                  else if(c == 'B' || c == 'b')
                        {

                                    fm.SetArrow(new SixState());
                                    fm.CheckState(text, fm);


                        }

                  else if(c == 'C' || c == 'c')
                        {
                        fm.SetArrow(new FourState());
                        fm.CheckState(text, fm);

                        }
            }
            return currentstate;
      }

}
```

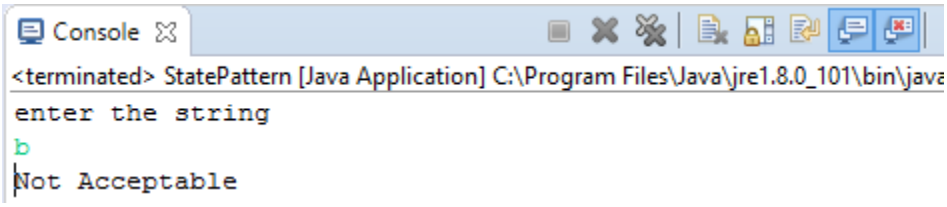
```
                        /* -------Six State----- */
package fsa;

public class SixState extends FSA {

	@Override
	public int CheckState(String t, FsaMachine fm)
	{
		this.text=t;
		this.fm= fm;
		String s = text;
		currentstate=6 ;
		if(counter < text.length())
		{
			char c = s.charAt(counter);
			counter++;

			if(c == 'A' || c == 'a')
				{
				fm.SetArrow(new FiveState());
				fm.CheckState(text, fm);

				}

			else if(c == 'B' || c == 'b')
				{

                                        fm.SetArrow(new FourState());
                                        fm.CheckState(text, fm);
			}

			else if(c == 'C' || c == 'c')
				{


                                    fm.SetArrow(new StartState());
                                    fm.CheckState(text, fm);

                                }
		}
		return currentstate;

	}

}
```

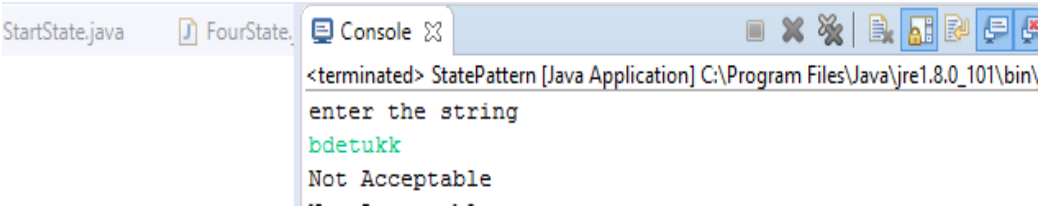
OUTPUT:

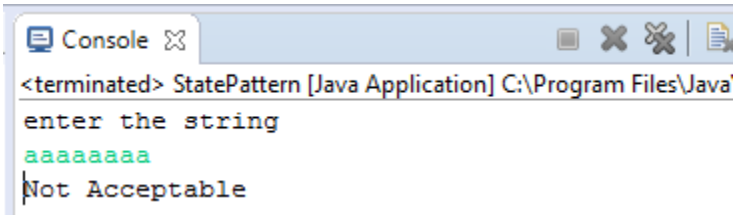


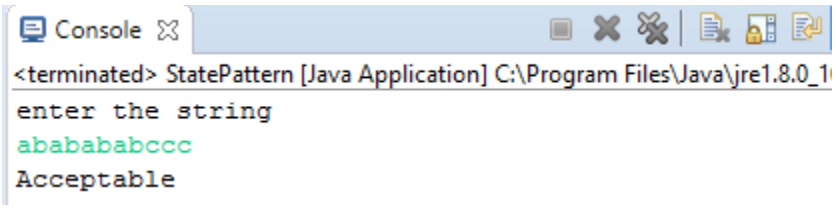












Question no 2:

2. What words are accepted by this FSA?

Accepted words:

bbaabc
bbaabccbbcb
ABCBBCCCAA
Cbacaabbababcbcacab
cbabc