ASSIGNMENT

GEETANJALI

26-05-2019

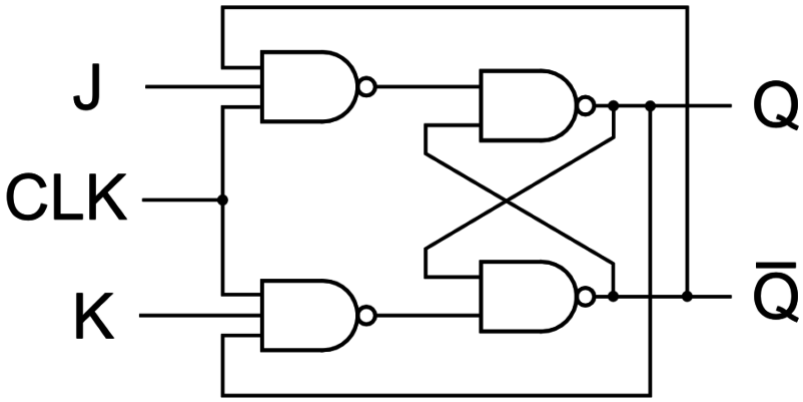

Figure 1: JK flipflop Circuit

1 QUESTION

1.1 DESIGN A 3 BIT UP COUNTER WITH JK FLIPFLOP AND DISPLAY THE OUTPUT ON LED

LOGIC FUNCTION

```
int JKlogic(int J,int K)
{
  int CK=1,Q=0,NQ=1,s,r;
  s=!(CK&&J&&NQ);
  r=!(CK&&K&&Q);
  Q=!(s&&NQ);
  NQ=!(r&&Q);

  return Q;
}
```

PROGRAM

```
#include"Arduino.h"
#include"JKlogic.h"
int  A,B,C,D,E,F;
void setup()
{
  pinMode(6,OUTPUT);
  pinMode(7,OUTPUT);
  pinMode(8,OUTPUT);
  Serial.begin(9600);
}
void loop()
{
  A=0;
  B=0;
  C=0;

  for (int i=1;i<=8;i++)
  {
  D=JKlogic(A,!A);
  E=JKlogic(B,!B);
  F=JKlogic(C,!C);
  Serial.println(D);
  digitalWrite(6,D);
  digitalWrite(7,E);
  digitalWrite(8,F);
  delay(1000);

  if(i%4==0)
  A=!A;

  if(i%2==0)
  B=!B;

  C=!C;
}
}
```

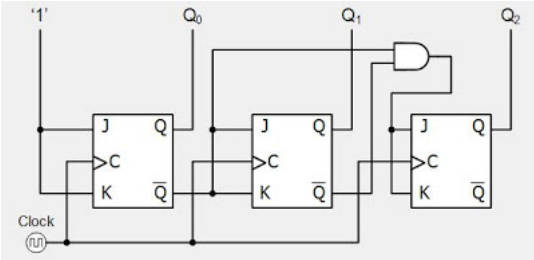

Figure 2: JK flipflop Counter Circuit

1.2 DESIGN A 3 BIT DOWN COUNTER WITH JK FLIPFLOP AND DISPLAY THE OUTPUT ON LED

PROGRAM

```
#include"Arduino.h"
#include"JKlogic.h"
int   A,B,C,D,E,F;
void setup()
{
  pinMode(5,OUTPUT);
  pinMode(6,OUTPUT);
  pinMode(7,OUTPUT);
  Serial.begin(9600);
}
void loop()
{
  A=1;
  B=1;
  C=1;

  for (int i=1;i<=8;i++)
  {
  D=JKlogic(A,!A);
  E=JKlogic(B,!B);
  F=JKlogic(C,!C);
  Serial.println(D);
  digitalWrite(5,D);
  digitalWrite(6,E);
  digitalWrite(7,F);
  delay(1000);

  if(i%4==0)
  A=!A;
```

```
    if ( i%2==0)
    B=!B;

    C=!C;
}
}
```