

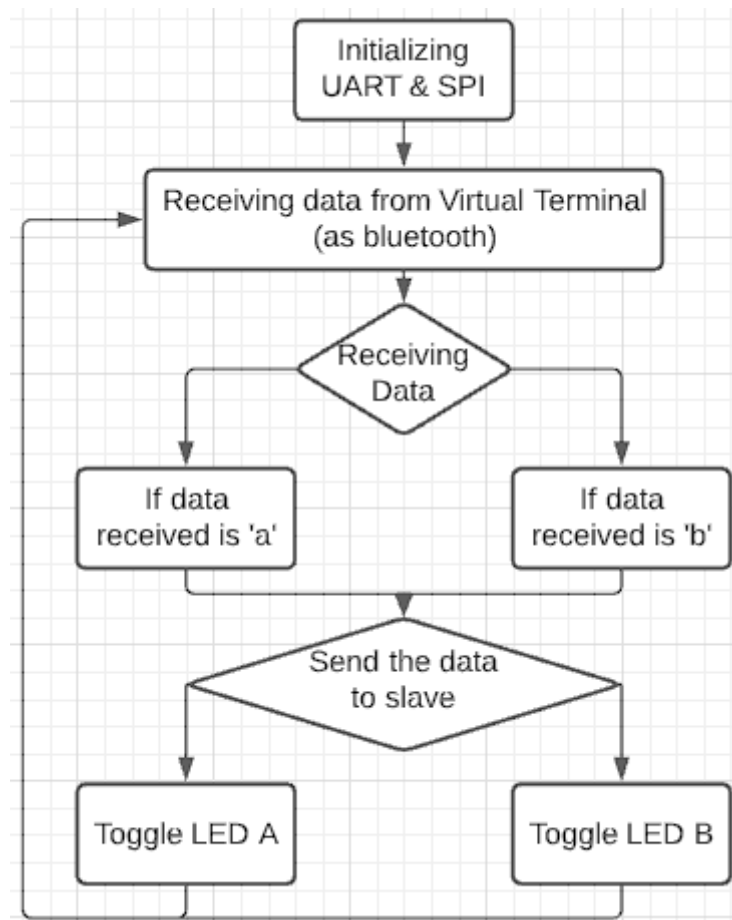
**SMART HOME PROJECT**

**AMIT Learning**

**GROUP no: K9**

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### **Flowchart of the Project:**



### **Description**

#### **Common functions:**

1- `DIO_voidSetPinDirection(PORT ADDRESS, PIN NUMBER, DIRECTION);`

Includes needed:

`#include "DIO_config.h"`

`#include "DIO_interface.h"`

`#include "DIO_private.h"`

Description:

Used to set the direction of a pin to either input or output.

**Parameters:**

a- PORT ADDRESS: the address of the port in which the pin we want to specify the direction of in, there are 4 I/O ports in Atmega32 (A,B,C and D).

b- PIN NUMBER: The number of the pin we want to specify the direction of, takes a number from 0 to 7.

c- DIRECTION: The pin direction, either INPUT or OUTPUT.

2- SPI\_TransRecieve(DATA);

*Includes needed:*

#include "SPI.h"

Description: Used to send and receive data, takes data to be sent as input and returns received data as output.

**Parameters:**

DATA: data to be sent.

**Master functions:**

3- UART\_Init();

*Includes needed:*

#include "UART.h"

*Description:*

Initializes the UART communication protocol.

**Parameters:** None.

4- SPI\_Master\_Init();

Includes needed:

#include "SPI.h"

*Description:*

Initializes this MCU as a master.

**Parameters:** None.

5- SPI\_Master\_InitTrans();

*Includes needed:*

#include "SPI.h"

*Description:* Enables this MCU to start transmitting data.

**Parameters:** None.

6- UART\_Rx();

*Includes needed:*

#include "UART.h"

*Description:* Returns the data received through UART communication.

**Parameters:** None.

## **Slave functions:**

1- SPI\_Slave\_Init();

*Includes needed:*

#include "SPI.h"

*Description:* Used to initialize this MCU as a slave.

**Parameters:** None.

2- TOG\_BIT(PORT ADDRESS, PIN NUMBER);

*Includes needed:*

#include "Bit\_Math.h"

*Description:* Used to toggle the value of an output bit in an I/O register.

**Parameters:**

a- PORT ADDRESS: The address of the port that contains the output pin we want to toggle.

b- PIN NUMBER: The number of the pin we want to toggle.