

## อธิบาย Code Lab2\_3 : CS43L22

Speaker driver initiation :

```
void initSpeaker(){
    HAL_GPIO_WritePin(GPIOD, GPIO_PIN_4, 0);
    HAL_GPIO_WritePin(GPIOD, GPIO_PIN_4, 1);

    startval[0] = 0x47;
    startval[1] = 0x80;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);

    startval[0] = 0x32;
    startval[1] = 0x80;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);

    startval[0] = 0x32;
    startval[1] = 0x00;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);

    startval[0] = 0x1C;
    startval[1] = 0xAF;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);

    startval[0] = 0x1E;
    startval[1] = 0xE0;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);

    startval[0] = 0x02;
    startval[1] = 0x9E;
    HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);
}
```

Start the loop by check if the board is receiving something from Putty or not. If yes, then transmit the character back. If no, do nothing and continue checking :

```
if (HAL_UART_Receive(&huart2,&word,size,1000) == HAL_OK) {
    HAL_UART_Transmit(&huart2,&word,size,1000);
}
```

Check if the received character is c,d,e,f,g,a,b or not. If yes, send a 'prepare to change note' signal to speaker driver. If no, jump back to the beginning of the loop :

```
startval[0] = 0x1E;
startval[1] = 0x20;
HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);
```

Change the note to the specified character :

```
startval[0] = 0x1C;
if (word=='c') {
    startval[1] = 0x1F;
}
if (word=='d') {
    startval[1] = 0x2F;
}
if (word=='e') {
    startval[1] = 0x3F;
}
if (word=='f') {
    startval[1] = 0x4F;
}
if (word=='g') {
    startval[1] = 0x5F;
}
if (word=='a') {
    startval[1] = 0x6F;
}
if (word=='b') {
    startval[1] = 0x7F;
}
HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);
```

Send another signal to let the driver know the note changing is finished :

```
startval[0] = 0x1E;
startval[1] = 0xE0;
HAL_I2C_Master_Transmit(&hi2c1, 0x94, startval, 2, 50);
```

Play the sound for a period of time (in this case : 1000 ticks) :

```
for (it=0;it<1000;it++) {
    HAL_I2S_Transmit (&hi2s3, Istr , 0x10, 10 );
}
```