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| **Num** | **Functions** | **Projects** | **Description** |
| 1 | ADC | ADC\_SingleChannel\_ ContinuousMode | Read ADC value at PA0 pin |
| ADC\_Interrupt | Read the ADC value at pin PA0 in the interrupt handler function |
| ADC\_DMA | Read ADC DMA value at PA0 pin, PA1 pin, PA2 pin |
| 2 | Flash | FLASH\_ProgamPage | Use Flash library to read and write Flash memory |
| FLASH\_ConfigFlashViaUART | Change the value in memory via UART 1. The transmitted data must have the end character “|” to indicate the process of receiving data has ended. |
| 3 | GPIO | GPIO\_BlinkLed | GPIO Output - flashing LED 1s / 1 time |
| GPIO\_Button | GPIO Input - press the button to switch the status of the LED in combination with anti-interference |
| GPIO\_Interrupt | GPIO Input - press the button to switch the status of the LED in interrupt handler function, combination with anti-interference |
| 4 | I2C | I2C\_CommunicationWithDS3231 | Take the time from the DS3231 module and print it to the screen |
| I2C\_CommunicationWithLCDI2C16x2 | Use the lcd library to display any string |
| 5 | IWDG | IWDG\_Reset | Once the push button is pressed, the LED reverses the status to On and remains in that state for 2 seconds. Then MCU is reset and LED turns off |
| 6 | POWER | POWER\_StandbyMode | For MCU in Standby mode, wake up when user press the Reset button |
| POWER\_SleepMode | For MCU in Sleep mode, wake up when user press the Reset or EXTI button |
| POWER\_StopMode | For MCU in Stop mode, wake up when user press the Reset or EXTI button |
| 7 | RTC | RTC\_Calendar | Every second will display hours, minutes, seconds on the screen |
| RTC\_AlarmA | Print any text on the screen according to the installation alarm |
| 8 | SPI | SPI\_CommunicationWithSDCard | Use the sd library to create files, write files, read files |
| 9 | TIMER | TIMER\_TimeBase | Configure timer to create interrupt 1s |
| TIMER\_PWM | Control the brightness of light |
| 10 | UART | UART\_Transmit&ReceivePolling | Receive any data (with the fixed length given) from other device. If the data is received successfully, it will transmit back to the transmitter “Receive OK” |
| UART\_Transmit&ReceiveInterrupt | Receive any data (with the fixed length given) from other device in the interrupt handler function then If the data is received successfully, it will transmit back to the transmitter the same data |
| 11 | WWDT | WWDG\_EarlyWakeupCallback | The program consists of 2 initial status LEDs that are off. An LED will reverse the state to check the operation of the MCU. The remaining LED will be turned on when entering the EWC function, off when MCU is reset. |