# EXPERIMENT – 1.3

# Interfacing WS2812 RGB led with nRF dev board

**What will you learn from this module** :

Make different patterns using RGB(red, green, blue)ring led.

## Requirements:

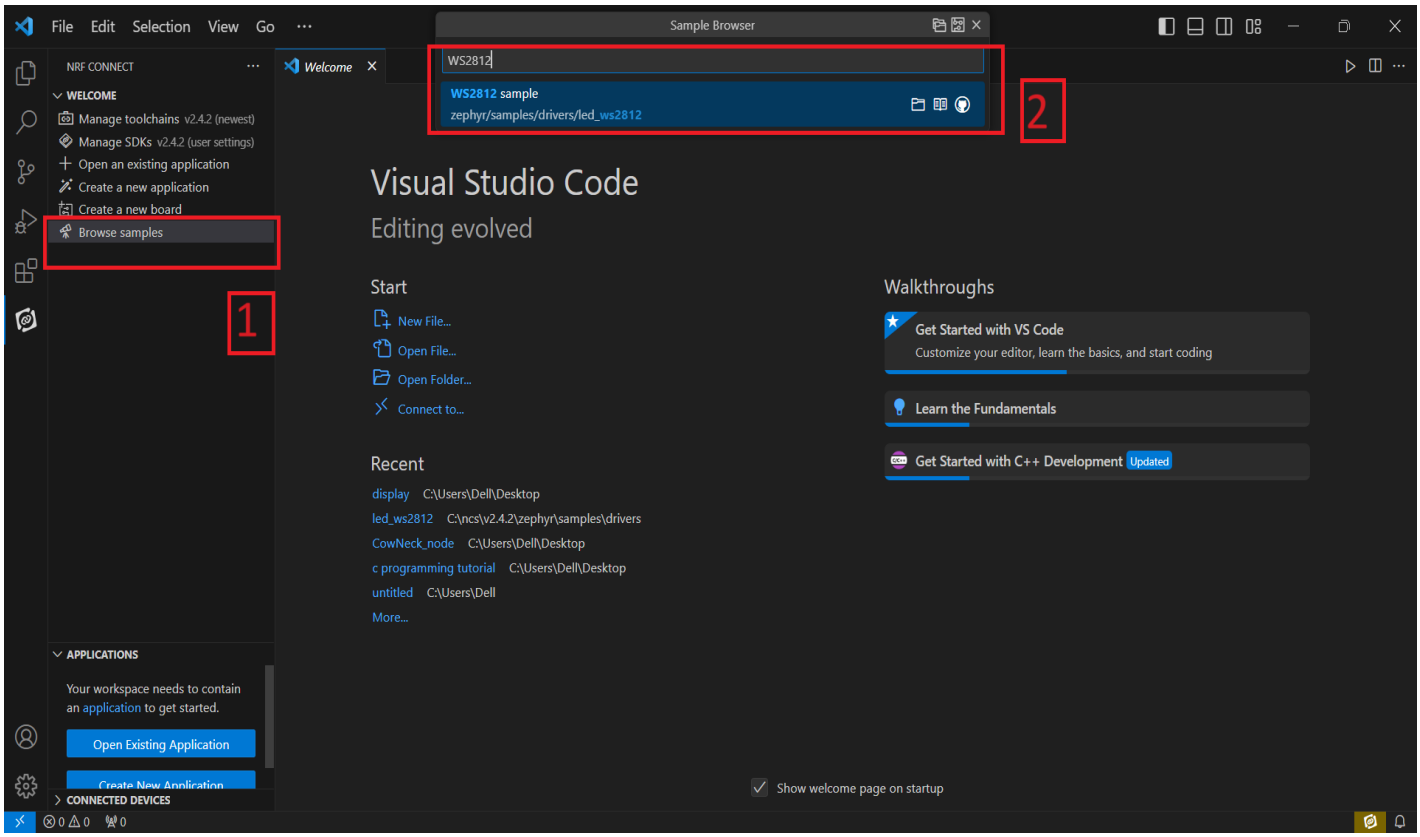
- nRF connect desktop software.
- nRF Command line tools.
- Visual studio code.
- USB cable.
- nRF 52832 board.
- WS2812 RGB led.

## Prerequisites:

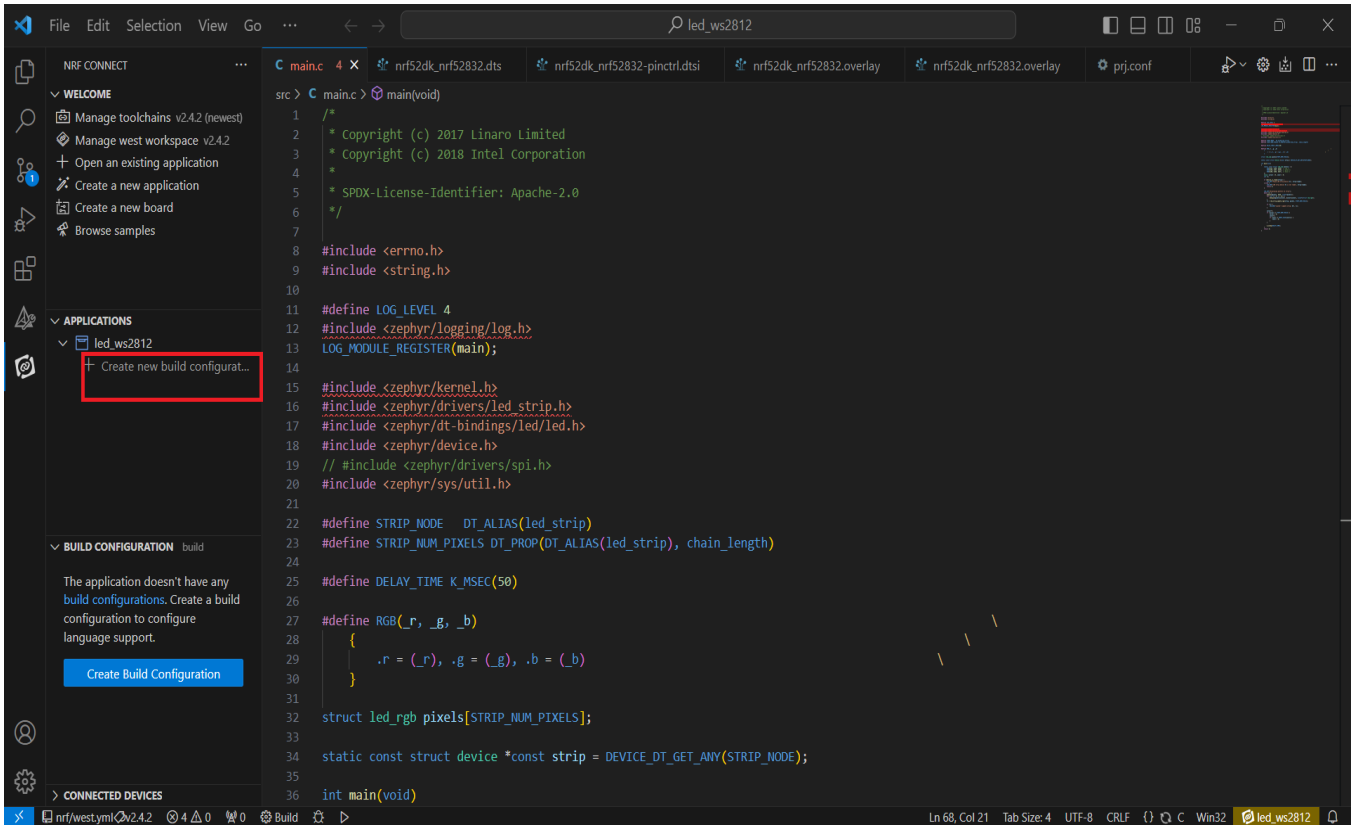
- Basic knowledge of C/C++
- Basic knowledge of communication protocol.
- Basic project setup.

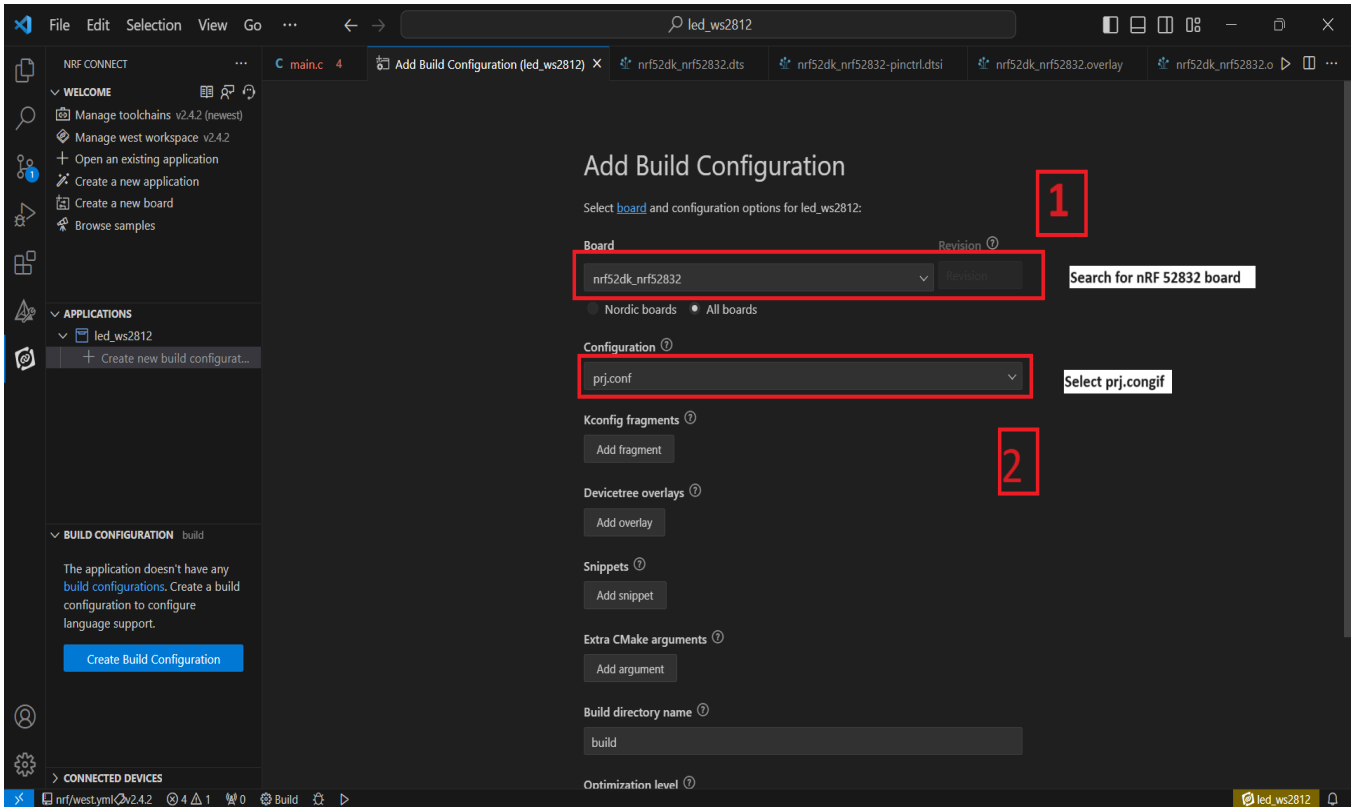
# Setup and Configuration:

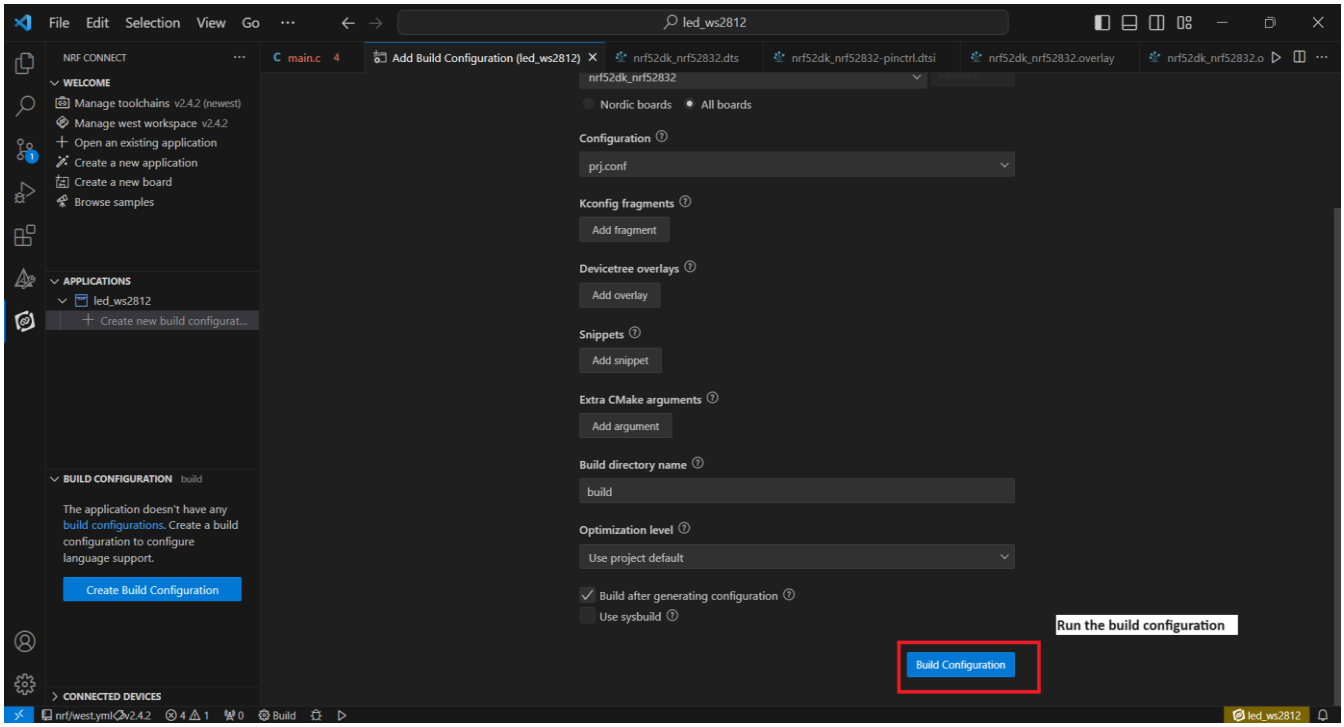
➢ Open VS Code and go to browse sample and search WS2812.



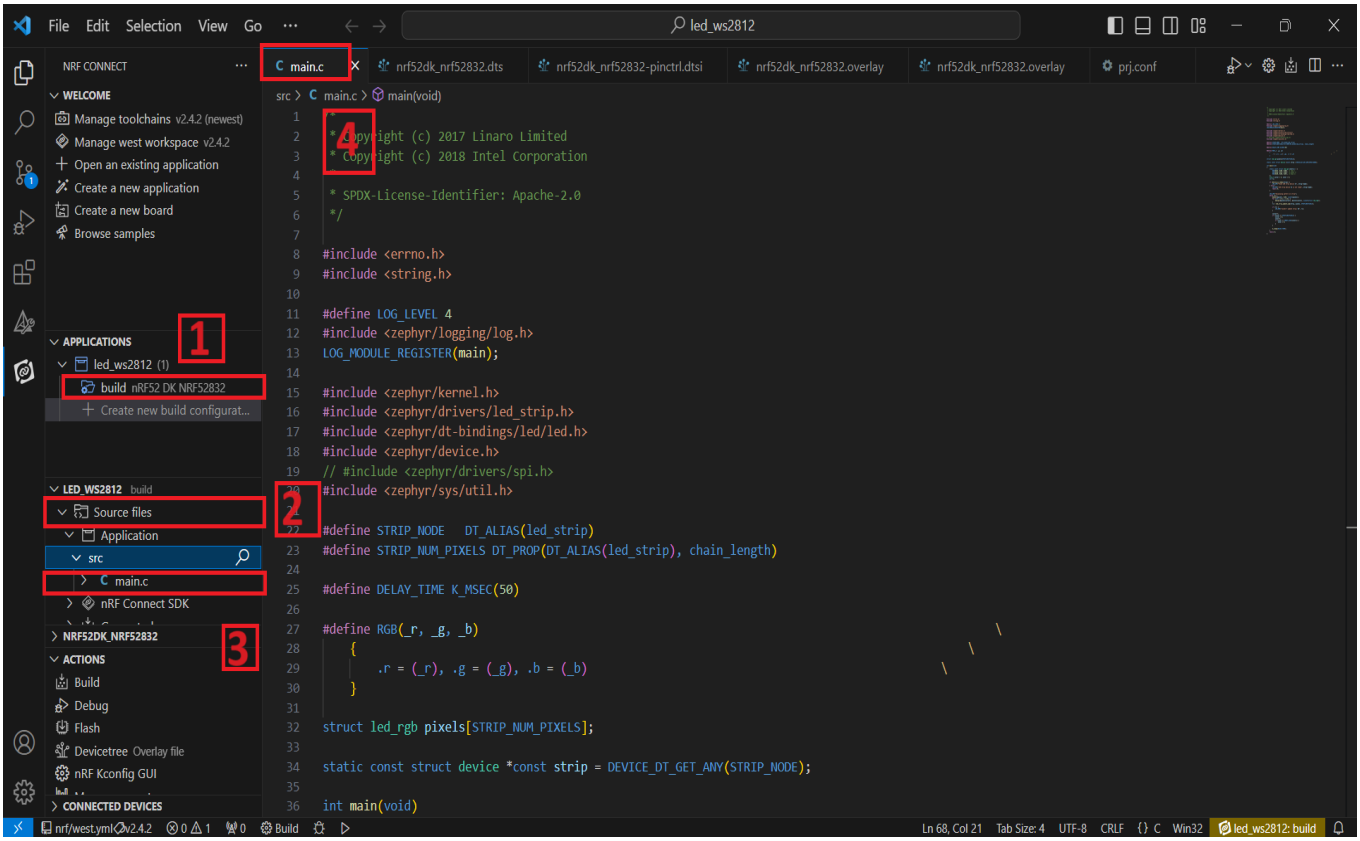

➢ Click on create new build configuration here you can change the board version, if you are using nRF 52832 then you can change from there for another version like nRF52833 etc.


File Edit Selection View Go
led_ws2812
NRF CONNECT
WELCOME
Manage toolchains v2.4.2 (newest)
Manage west workspace v2.4.2
Open an existing application
Create a new application
Create a new board
Browse samples
APPLICATIONS
led_ws2812
Create new build configurat...
BUILD CONFIGURATION build
The application doesn't have any build configurations. Create a build configuration to configure language support.
Create Build Configuration
CONNECTED DEVICES
main.c 4
nrf52dk_nrf52832.dts
nrf52dk_nrf52832-pinctrl.dtsi
nrf52dk_nrf52832.overlay
prj.conf
src > main.c > main(void)
/*
* Copyright (c) 2017 Linaro Limited
* Copyright (c) 2018 Intel Corporation
*
* SPDX-License-Identifier: Apache-2.0
*/
#include <errno.h>
#include <string.h>
#define LOG_LEVEL 4
#include <zephyr/logging/log.h>
LOG_MODULE_REGISTER(main);
#include <zephyr/kernel.h>
#include <zephyr/drivers/led_strip.h>
#include <zephyr/dt-bindings/led/led.h>
#include <zephyr/device.h>
// #include <zephyr/drivers/spi.h>
#include <zephyr/sys/util.h>
#define STRIP_NODE DT_ALIAS(led_strip)
#define STRIP_NUM_PIXELS DT_PROP(DT_ALIAS(led_strip), chain_length)
#define DELAY_TIME K_MSEC(50)
#define RGB(_r, _g, _b) \
{ \
.r = (_r), .g = (_g), .b = (_b) \
}
struct led_rgb pixels[STRIP_NUM_PIXELS];
static const struct device *const strip = DEVICE_DT_GET_ANY(STRIP_NODE);
int main(void)
nrf/west.yml v2.4.2
Build
Ln 68, Col 21
Tab Size: 4
UTF-8
CRLF
C
Win32
led_ws2812

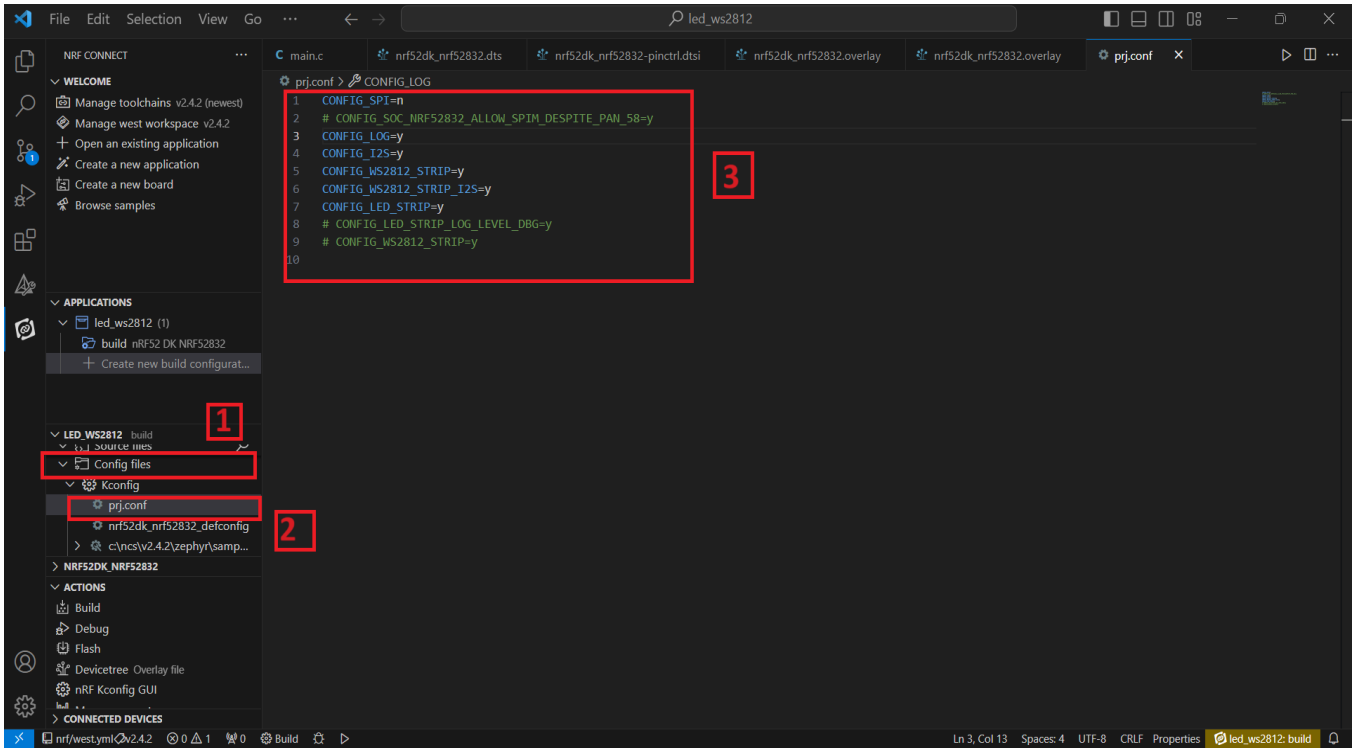

File Edit Selection View Go
led_ws2812
NRF CONNECT
WELCOME
Manage toolchains v2.4.2 (newest)
Manage west workspace v2.4.2
Open an existing application
Create a new application
Create a new board
Browse samples
APPLICATIONS
led_ws2812
Create new build configurat...
BUILD CONFIGURATION build
The application doesn't have any build configurations. Create a build configuration to configure language support.
Create Build Configuration
CONNECTED DEVICES
main.c 4
Add Build Configuration (led_ws2812)
nrf52dk_nrf52832.dts
nrf52dk_nrf52832-pinctrl.dtsi
nrf52dk_nrf52832.overlay
Add Build Configuration
Select board and configuration options for led_ws2812:
1
Board
Revision
nrf52dk_nrf52832
Search for nRF 52832 board
Nordic boards
All boards
Configuration
prj.conf
Select prj.congif
Kconfig fragments
Add fragment
2
Devicetree overlays
Add overlay
Snippets
Add snippet
Extra CMake arguments
Add argument
Build directory name
build
Optimization level
nrf/west.yml v2.4.2
Build
led_ws2812



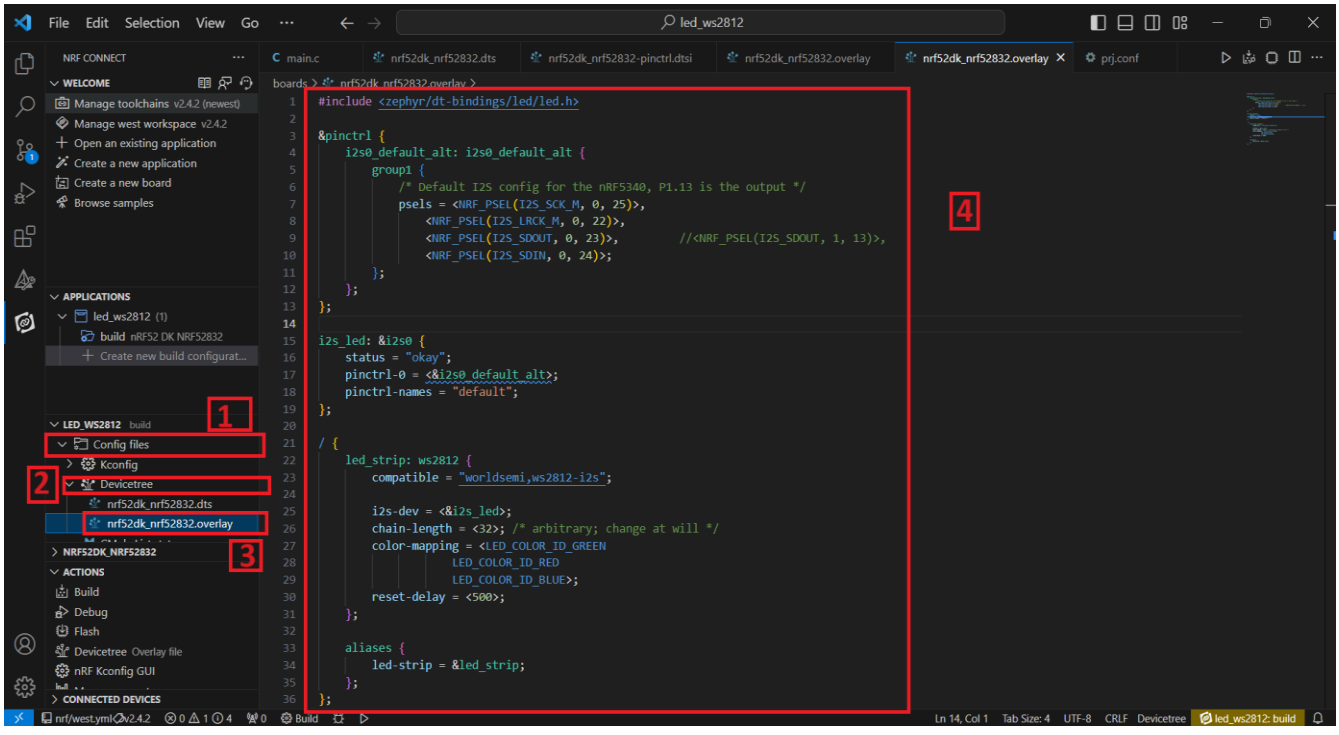

- Go to source file, inside source file > Application > src > main.c .
- click on main.c file and you will see the code will appear on your vs code.



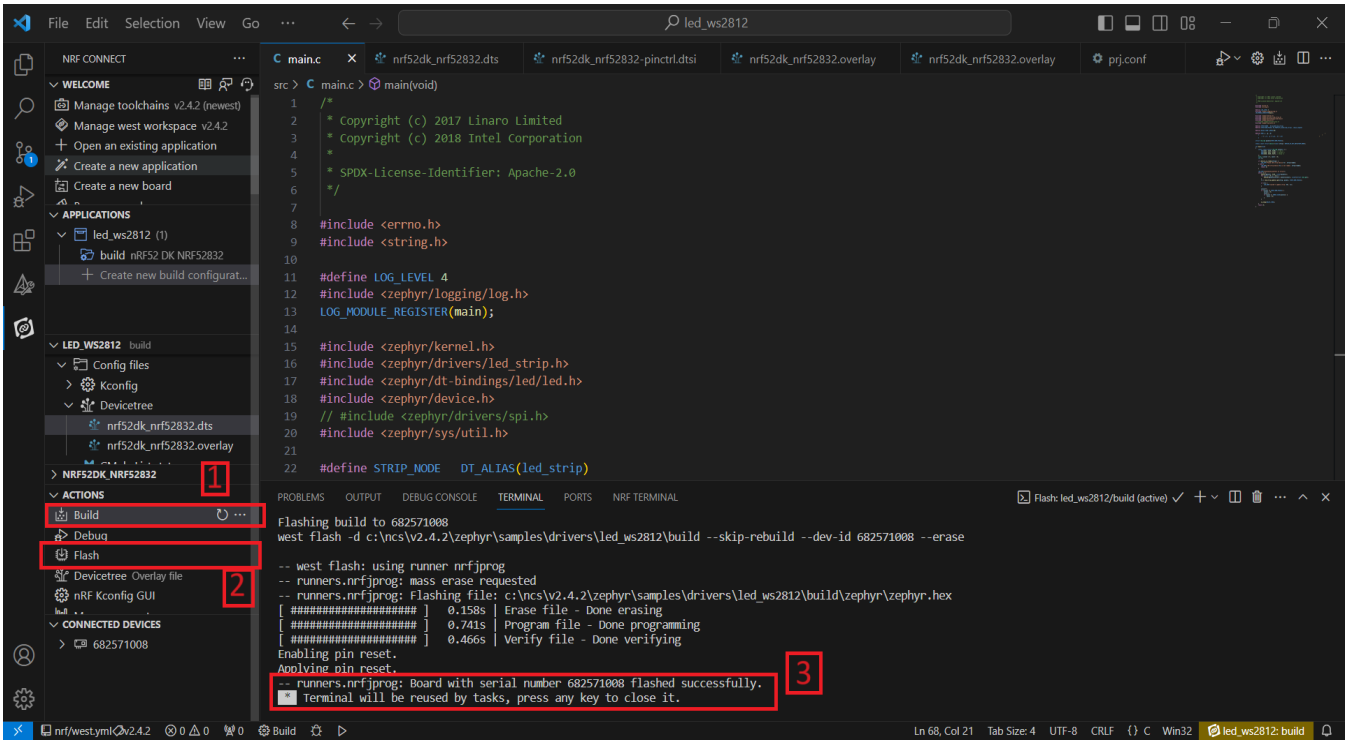
➢ To configure prj.conf go to the Config files > Kconfig > prj.conf as shown in figure



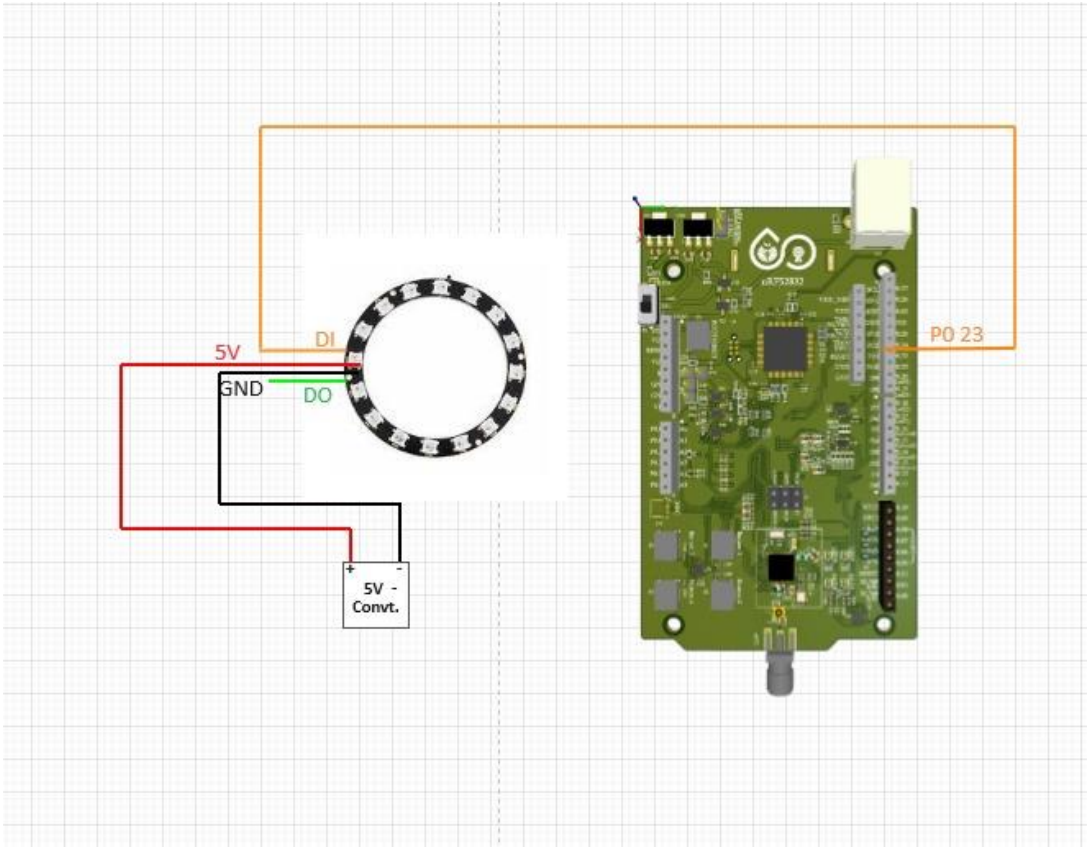

➢ For configure WS2812 led you need to enable i2s in overlay files Config files > device tree > overlay as shown in the figure.



- Run the build configuration again.
- Then flash the code in nRF dev kit.




## ❖ PIN CONFIGURATION OF WS2812 LED WITH THE BOARD



DI -> P023

5V -> (+)

GND -> (-)

❖ **OUTPUT**