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# ESP-IDF Configuration | How to add custom configuration in project config

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MarkEye

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## Introduction

When executing the command `idf.py menuconfig` we can see one well-structured menu with so many options. This menu is created using **esp-idf-kconfig** package. That is based on **kconfiglib**.

Behind the scene, this menu is a simple text file that is parsed using **esp-idf-config** package and gives us an organized menu view.

The interesting thing here is we can add our own custom configuration in this menu and can use it in our code.

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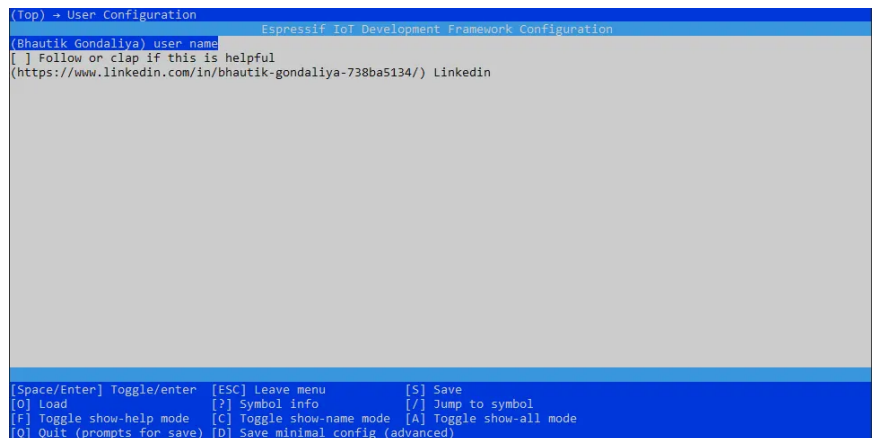


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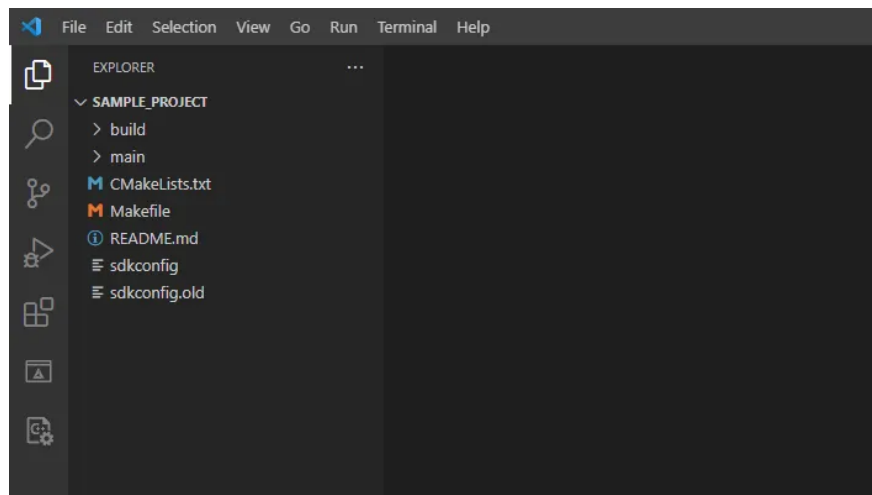


ESP-IDF: User details custom config for ESP32 sdkconfig sample

## How to do it?

### Step 1:

Copy `sample_project` example from ESP\_IDF `esp-idf\examples\get-started` to your workplace and open that folder in esp-idf terminal and type command `code .` to open that project in vs code. You get the project open in VScode as below.



ESP-IDF example project `sample_project` opened in vs code

### Step 2:

Create one file inside the main folder of `sample_project` with the name `Kconfig.projbuild`

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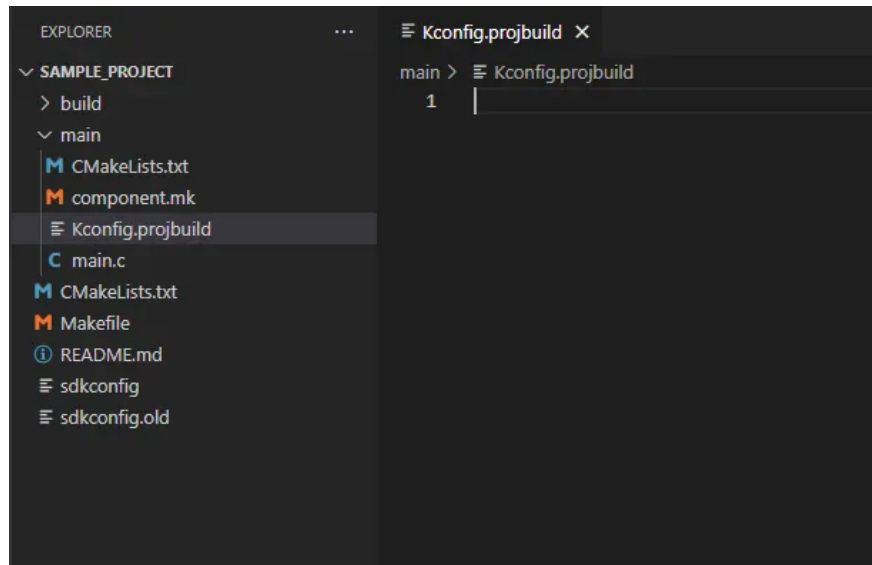


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Blank Kconfig.projbuild file created

### Step 3:

Write the below code in Kconfig.projbuild

```
menu "User Configuration String"
config USER_NAME
    string "user name"
    default "Mark"
    help
        Type a user name that you want to use
endmenu
```

Save it all, go to ESP-IDF terminal, and hit `idf.py menuconfig` command, and now you can see one menu added in configuration with the name “User Configuration String”.

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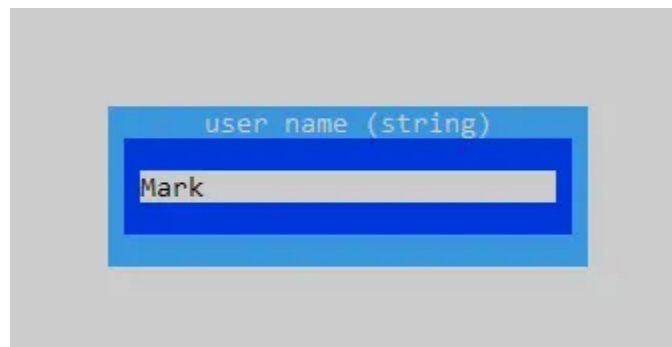
```
(Top)
SDK tool configuration --->
Build type --->
Application manager --->
Bootloader config --->
Security features --->
Serial flasher config --->
Partition Table --->
User Configuration String --->
Compiler options --->
Component config --->
Compatibility options --->
```

ESP-IDF Custom user menu added in project config

Let's look inside this new menu

```
(Top) → User Configuration String
(Mark) user name
```

ESP-IDF Inside look of custom created string menu



ESP-IDF Custom created string menu change

Inside the menu, we get the option 'user name' with the default value 'Mark'. So now by checking easily we can understand how our **Kconfig.projbuild** file code creates this menu, with the default value 'Mark'. And we can also access this user name in our project.

#### Step 4:

How to access the option that we create in custom configuration. Write the below code in 'main.c' file then save and build it using `idf.py build flash` and

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monitor using the command `idf.py flash monitor`.

```
#include <stdio.h>

void app_main(void)
{
    printf("username: %s\n", CONFIG_USER_NAME);
}
```

```
I (0) cpu_start: App cpu up.
I (216) cpu_start: Pro cpu start user code
I (216) cpu_start: cpu freq: 160000000
I (216) cpu_start: Application information:
I (221) cpu_start: Project name:    main
I (226) cpu_start: App version:    1
I (230) cpu_start: Compile time:   Dec 30 2022 12:04:13
I (236) cpu_start: ELF file SHA256: 6117ff510ec9dab7...
I (242) cpu_start: ESP-IDF:       v4.4.3
I (247) heap_init: Initializing. RAM available for dynamic allocation:
I (254) heap_init: At 3FFAE6E0 len 00001920 (6 KiB): DRAM
I (260) heap_init: At 3FFB28F0 len 0002D410 (181 KiB): DRAM
I (266) heap_init: At 3FFE0440 len 00003AE0 (14 KiB): D/IRAM
I (273) heap_init: At 3FFE4350 len 0001BCB0 (111 KiB): D/IRAM
I (279) heap_init: At 4008B4C0 len 00014B40 (82 KiB): IRAM
I (287) spi_flash: detected chip: generic
I (290) spi_flash: flash io: dio
W (294) spi_flash: Detected size(4096k) larger than the size in the binary
I (308) cpu_start: Starting scheduler on PRO CPU.
I (0) cpu_start: Starting scheduler on APP CPU.
username: Mark
```

ESP-IDF: Log output of accessing custom configuration

**Note\*** ‘CONFIG\_’ prefix is automatically attached to our custom config.

## Bool and Int custom configuration

as we create string configuration we can create different configurations with different data types like Int and Bool

### How to create Bool configuration

```
menu "User Configuration Bool"
config IS_USER_NAME_MARK
    bool "user name is mark?"
    help
```

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```
endmenu      Type a user name that you want to use
```

## How to create Int configuration

```
menu "User Configuration Int"
config TOTAL_USERS
    int "total users"
    default 1
    range 1 5
    help
        Type how many user using this
endmenu
```

Add the above code in Kconfig.projbuild file.

**NOTE\*** For creating a custom config we are using different keywords

### menu/endmenu

menu keyword start menu and endmenu keyword terminate the menu

### config

is keyword for creating configuration and giving a name to it

### bool

Is an attribute of config which tells configuration that this is bool type and besides this show message as “user name is mark?”

### int

Is an attribute of config which tells configuration that this is integer type and beside this shows the message of config detailing name.

### string

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Is an attribute of config which tells configuration that this is a string type and besides this shows the message of config detailing name.

### help

This is another attribute that shows a help message for the user to understand what for this configuration is. Users can see it by pressing 'F' key and toggle it by again pressing 'F'.

### range

Attribute use for int config which limits the user input.

After adding these three different menus now see inside how our project config looks using **idf.py menuconfig**.

```
SDK tool configuration --->
Build type --->
Application manager --->
Bootloader config --->
Security features --->
Serial flasher config --->
Partition Table --->
User Configuration String --->
User Configuration Bool --->
User Configuration Int --->
Compiler options --->
Component config --->
Compatibility options --->
```

```
[ ] user name is mark?
```

```
(1) total users
```

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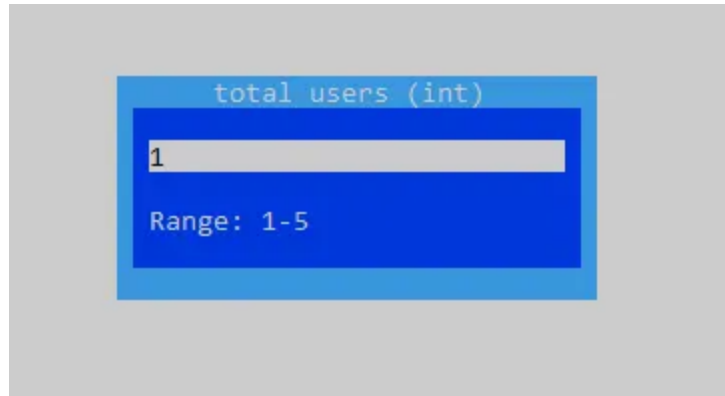


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Now put the below code in **main.c** and check out the output.

```
#include <stdio.h>

void app_main(void)
{
    printf("username: %s\n", CONFIG_USER_NAME);
#ifdef CONFIG_IS_USER_NAME_MARK
    printf("User is mark\n");
#else
    printf("User is not mark\n");
#endif
    printf("total users: %d\n", CONFIG_TOTAL_USERS);
}
```

```
I (0) cpu_start: App cpu up.
I (216) cpu_start: Pro cpu start user code
I (216) cpu_start: cpu freq: 160000000
I (216) cpu_start: Application information:
I (221) cpu_start: Project name:      main
I (226) cpu_start: App version:      1
I (230) cpu_start: Compile time:     Dec 30 2022 14:14:59
I (236) cpu_start: ELF file SHA256: 9a410167f270aaa7...
I (242) cpu_start: ESP-IDF:         v4.4.3
I (247) heap_init: Initializing. RAM available for dynamic allocation:
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I (260) heap_init: At 3FFB2BF0 len 0002D410 (181 KiB): DRAM
I (267) heap_init: At 3FFE0440 len 00003AE0 (14 KiB): D/IRAM
I (273) heap_init: At 3FFE4350 len 0001BCB0 (111 KiB): D/IRAM
I (279) heap_init: At 4008B4C0 len 00014B40 (82 KiB): IRAM
I (287) spi_flash: detected chip: generic
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W (294) spi_flash: Detected size(4096k) larger than the size in the binary
I (308) cpu_start: Starting scheduler on PRO CPU.
I (0) cpu_start: Starting scheduler on APP CPU.
username: Mark
User is mark
total users: 1
```



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ESP-IDF: All custom config accessed in code output

## GitHub Repository

The full code is on below GitHub link.

### GitHub - MarkEvens/ How\_to\_add\_custom\_project\_c...

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## For more details check out this official document

<https://docs.espressif.com/projects/esp-idf/en/latest/esp32/api-reference/kconfig.html>

## Thanks for reading

So now you know how to make custom configurations for your project and use it in your code. And if you find this information helpful for you, please follow me and clap for this article.

In the next blog, I'll talk about one more **kconfig** keyword and see one use of this custom config.

Esp32

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
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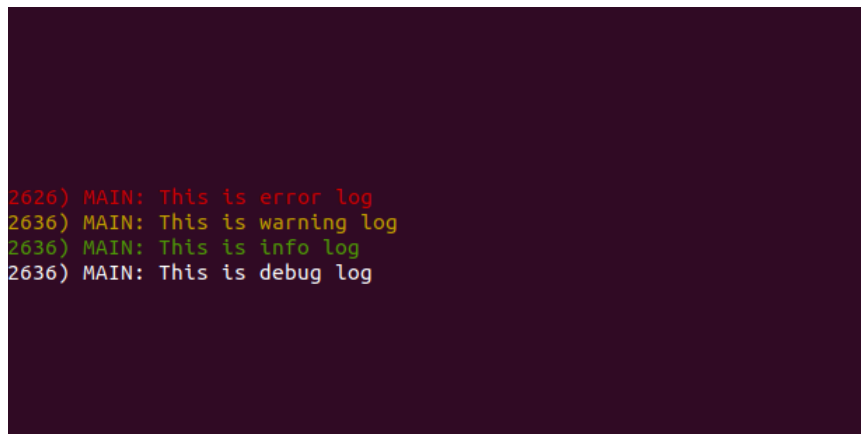


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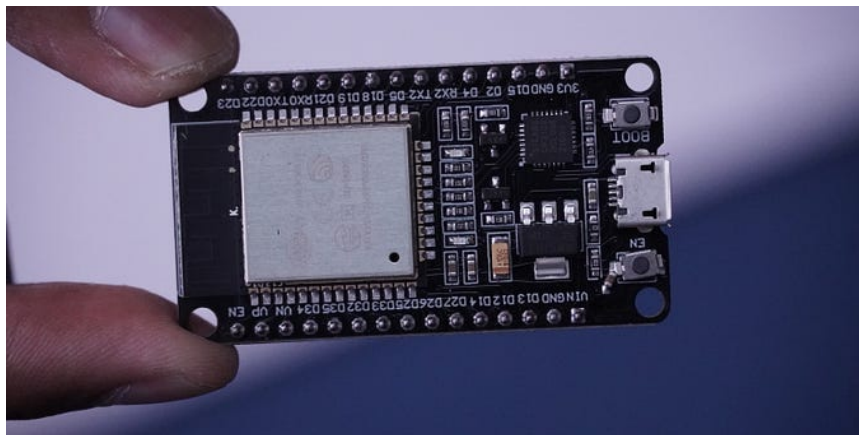


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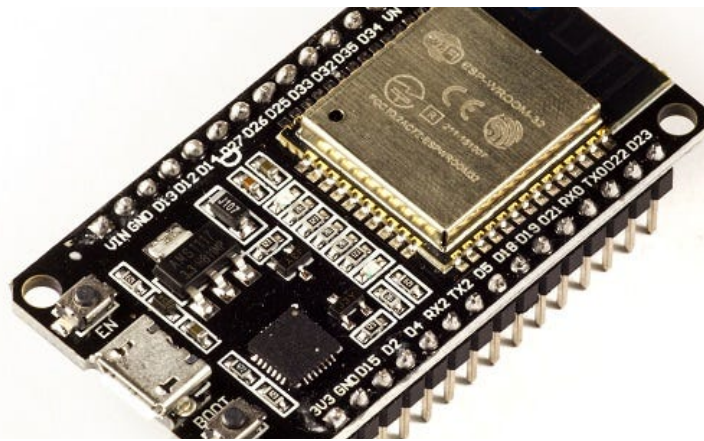


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What is a component of ESP-IDF, So basically it is a library for ESP-IDF. And inside this component/library we write some...

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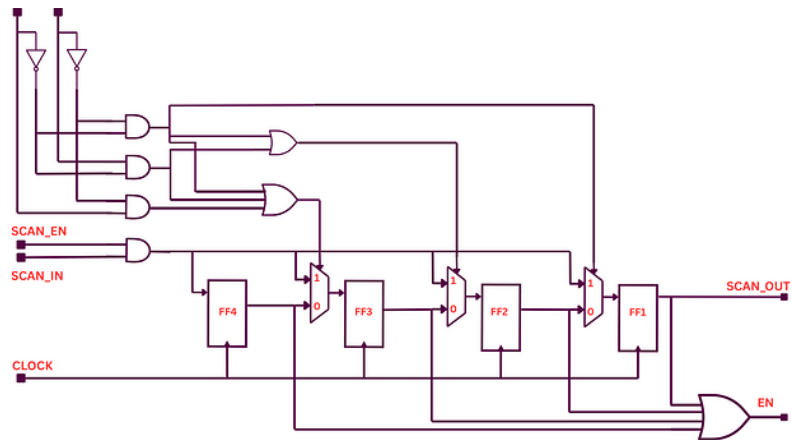


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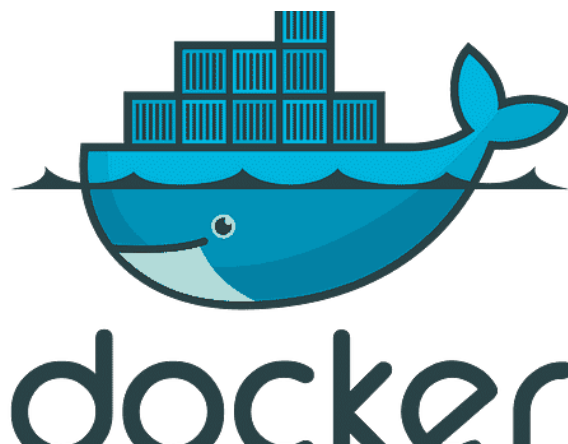


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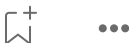


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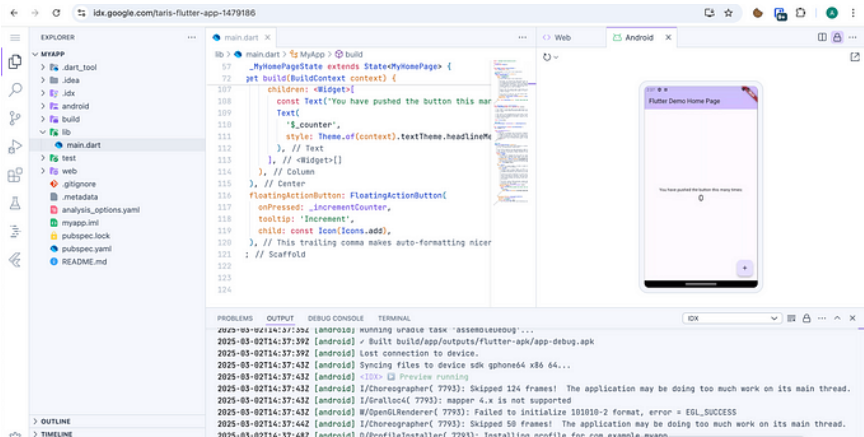


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