USER MANUAL
FOR
PIC 32 PROJECT BOARD

Manufactured By

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UNIVERSIAL EMBEDDED TRAINER WITH PIC32

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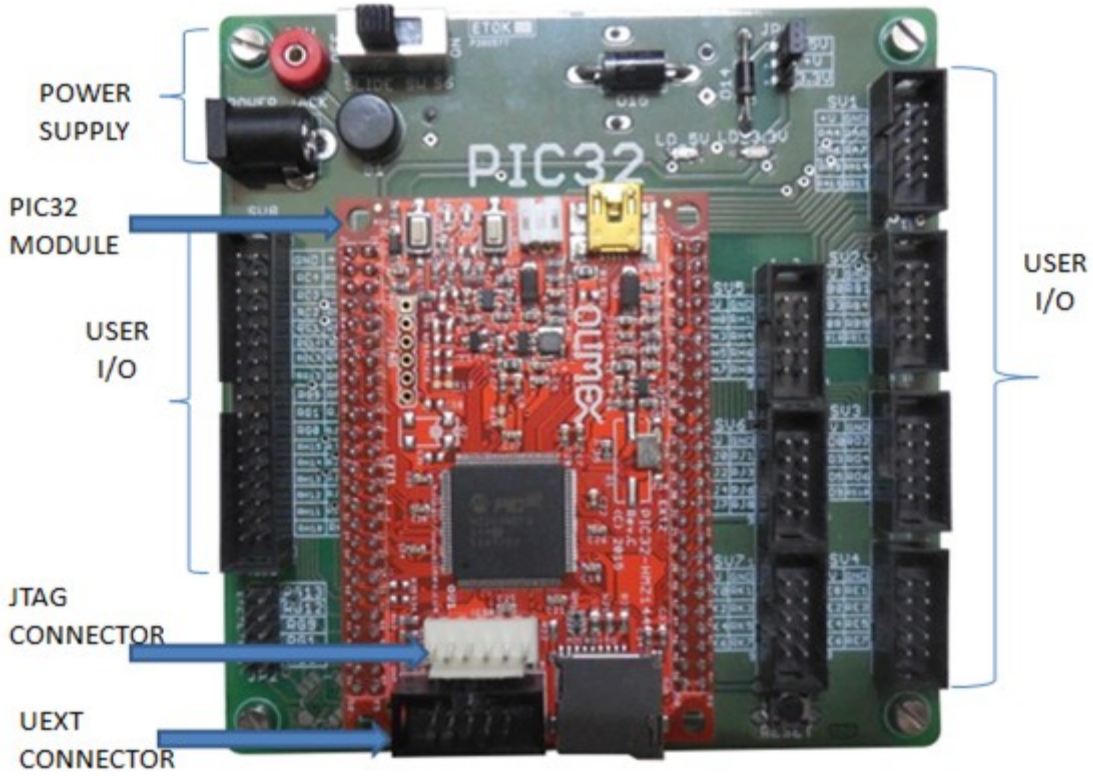
PIC32 PROJECT BOARD

1. INTRODUCTION:



PIC32 MICROCONTROLLER BOARD

PIC32-HMZ144 board features a PIC32MZ2048EFG144 processor. It is one of the most-capable PIC32 processors ever made and it has a lot of interfaces available (FPU, 6 x UARTs; 6 x SPIs; 5 x I2Cs; 120 x IO pins; 48-channel ADC; two analog comparators; Ethernet; USB-OTG; JTAG; TRACE; etc.) The board has several ready-to-use interfaces exposed and available on connectors: a micro SD card connector; mini USB connector (with OTG functionality); ICSP connector for programming and debugging; UEXT connector for extension modules; user programmable LED; user-programmable button; 100 pinholes in two rows for measurements and access to IO processor pins; etc.

2. FEATURES:

The most notable board features are listed below:

- PIC32MZ2048EFG144 with 512KB RAM and 2MB flash (PIC32MZ2048ECG144 was used before)
- USB-OTG functionality with mini USB connector
- Micro SD card connector
- ICSP for debugging and programming
- JTAG pins exposed on 0.1" step 6 pins
- EXT1 and EXT2 50 pin 0.1" connectors that ease the access to the processor
- RESET and USER buttons
- PWR and STATUS LEDs
- Li-Po battery connector and charger
- UEXT connector
- Dimensions: (77×52)mm ~ (3×2)mm

HARDWARE REQUIRED FOR PROGRAMMING

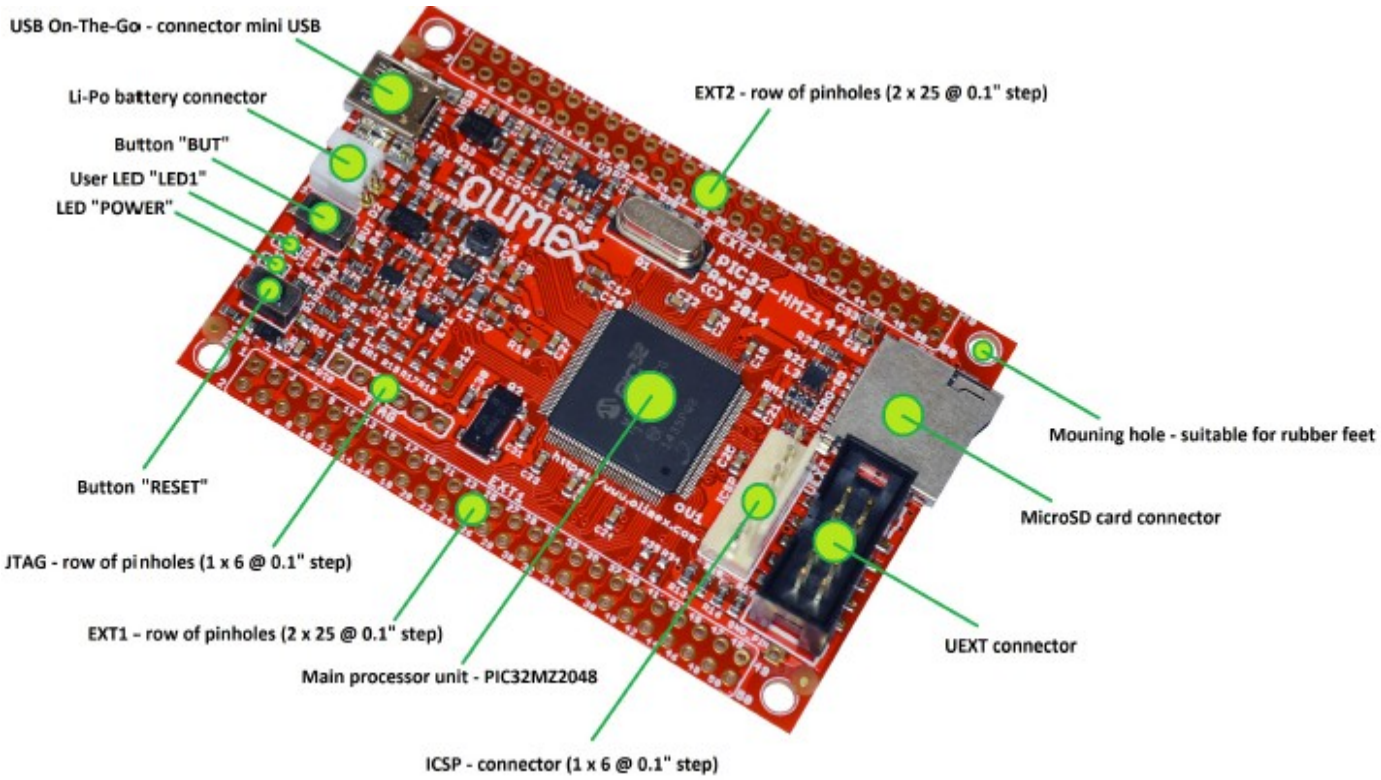
In order upload code on the board you would need a PIC32 compatible debugger or programmer. Older tools might lack support for PIC32 processor. Please ensure your programmer/debugger is compatible with the PIC32MZ processor family.

SOFTWARE REQUIRED FOR PROGRAMMING

You would need software that supports PIC32MZ family of processors. The most commonly used tool for software development for PIC32MZ applications is MPLAB X. The most used tool for binary upload to PIC32MZ is MPLAB IPE. Microchip provides a set of libraries and demo projects for the PIC32MZ family in their "Harmony Integrated Software Framework".

NOTE: THAT MPLAB 8.XX DOES NOT SUPPORT PIC32MZ.

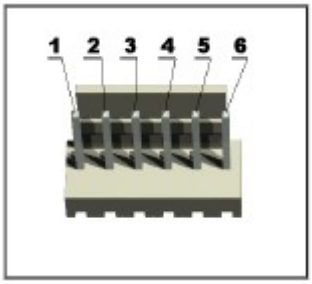
LAYOUT (TOP VIEW):



ICSP CONNECTOR

The ICSP connector is used for serial programming. It is the place where most common PIC32-compatible programmers and debuggers are connected.

Pin #	Signal name
1	RSTN
2	3.3V
3	GND
4	PGED2
5	PGEC2
6	NC



PGED2 conducts I/O operations for the "Program Data" signal. Serial data for programming.

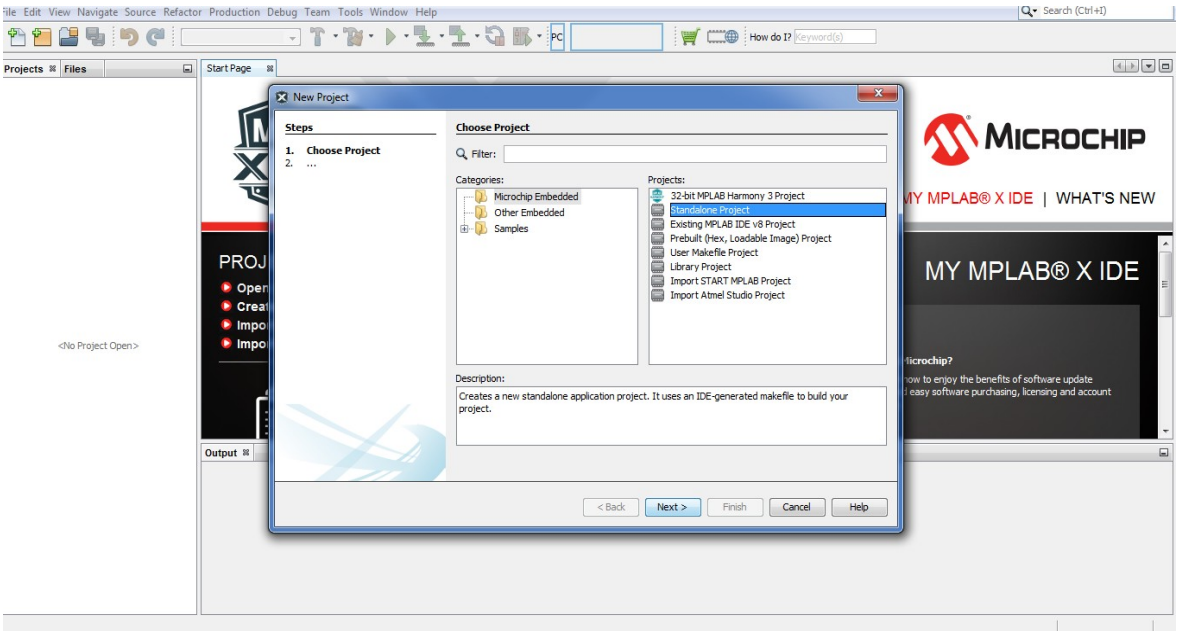
PGEC2 serves only as input for the “Program Clock” signal. Clock used for transferring the serial data (output from ICSP, input for the MCU).

3. HOW TO CREATE AND UPLOAD THE PROGRAM INTO PROJECT BOARD:

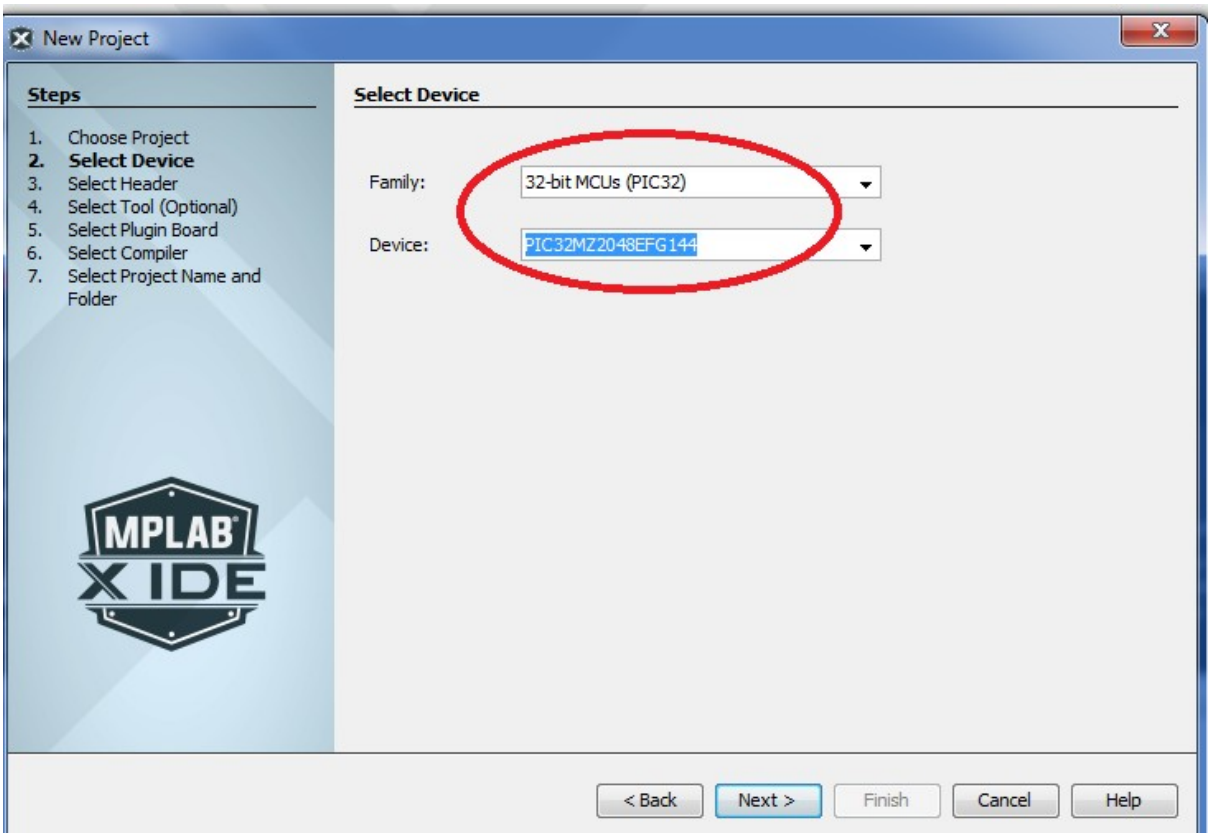
Software used: **MPLAB X**

1. Open MPLAB X software ➔ Go to File menu ➔ click on New project ➔ New window will open

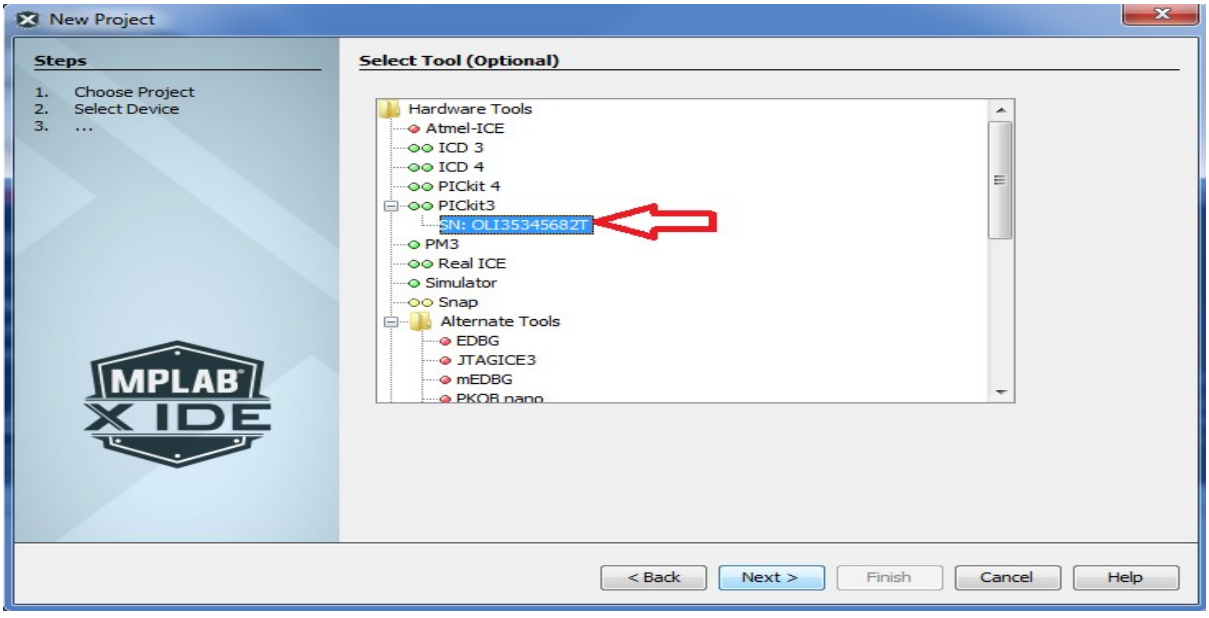
2. In that window in categories tab select ➔ Microchip Embedded and in project tab select ➔ standalone projects . Click ➔ Next



3. In next window select family ➔ 32-bit MCUs (PIC32) and ➔ Device : PIC32MZ2048EFG144

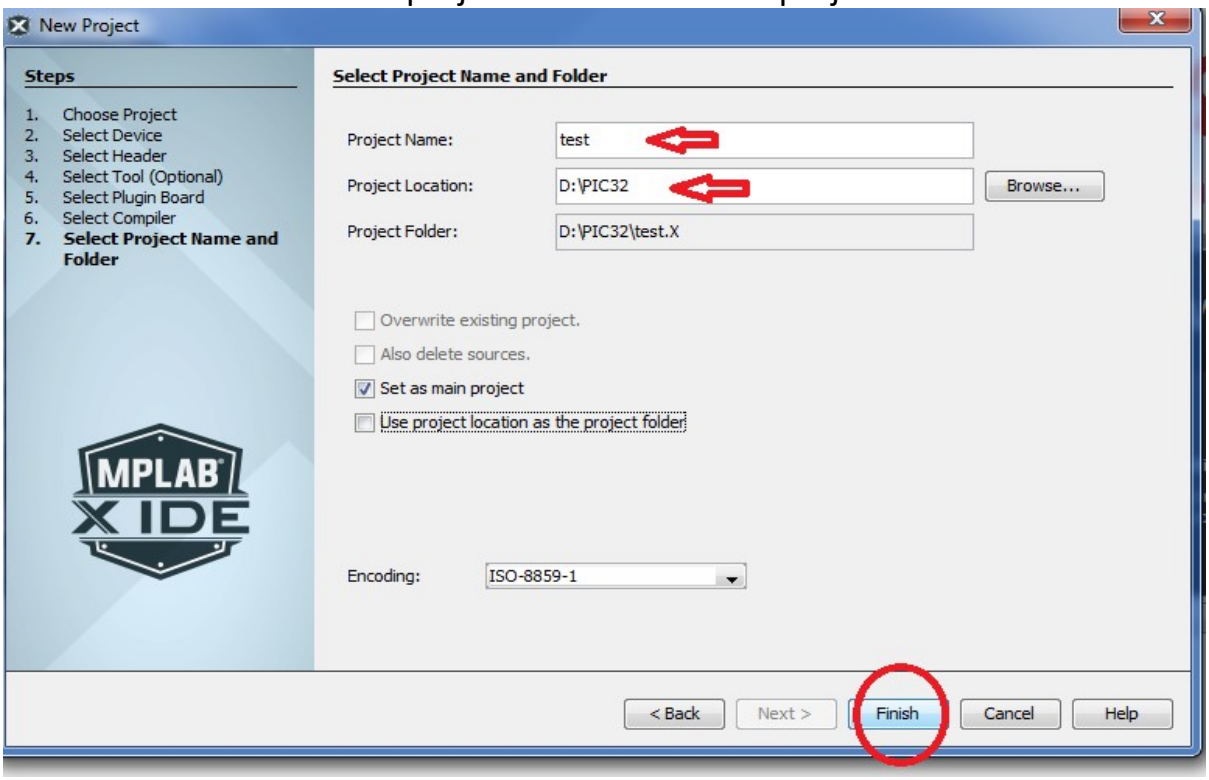


4. Next window in Hardware tools select PICkit 3 subelement and click on Next

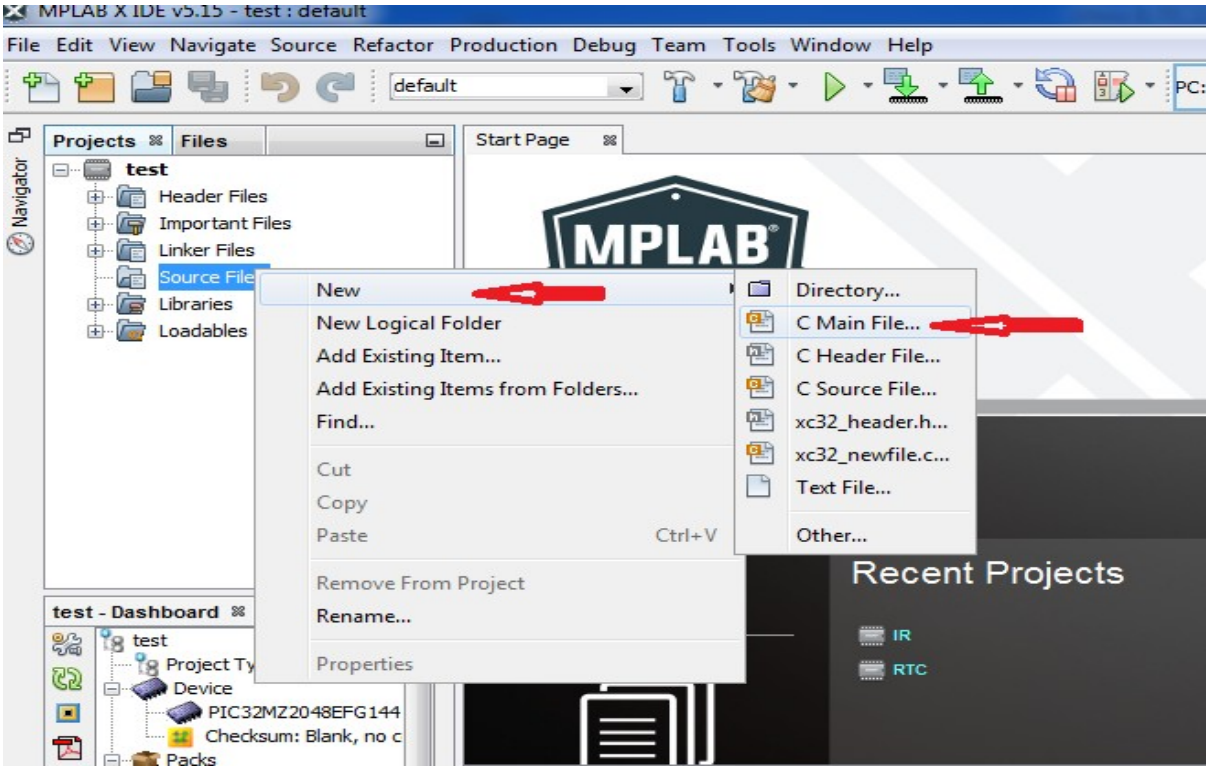


5. In next window select latest XC32 compiler toolchain ➔ if You don't have XC32 compiler click on Download Latest. Give file path and click on Open. Downloading will get start.

6. Now click on next ➔ Give project name and select project location. And click on finish.

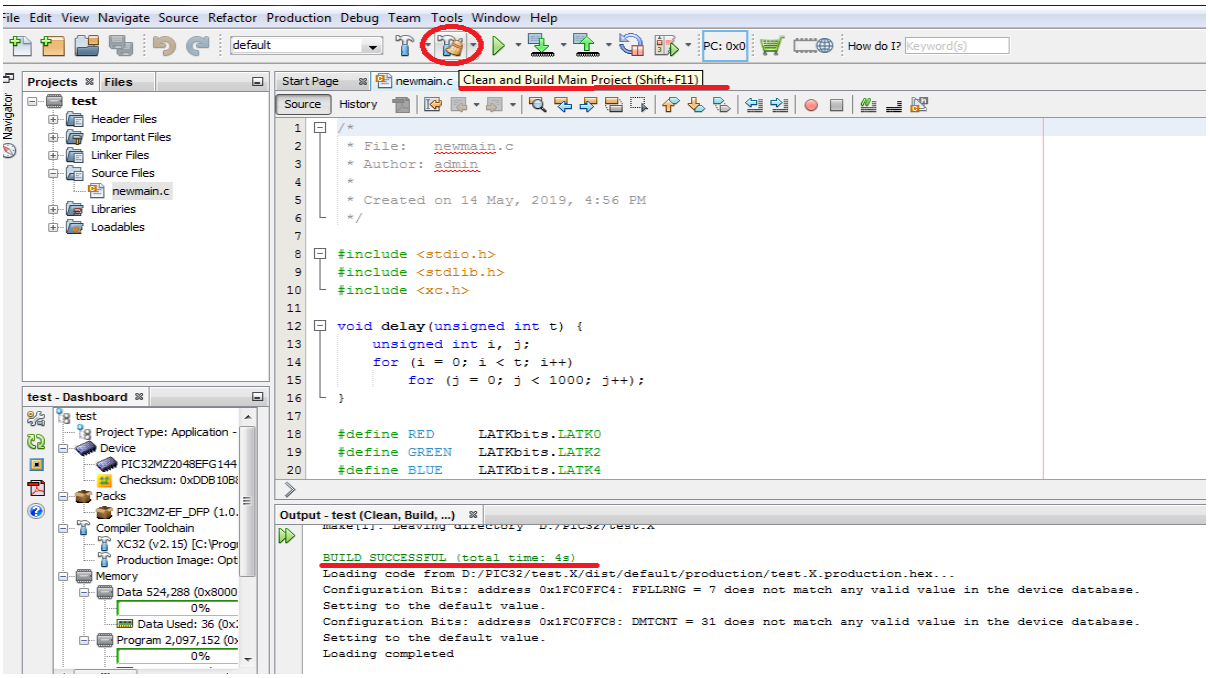


7. Now new project will get open ➔ in project window expand project and right click on source file ➔ New ➔ C main file

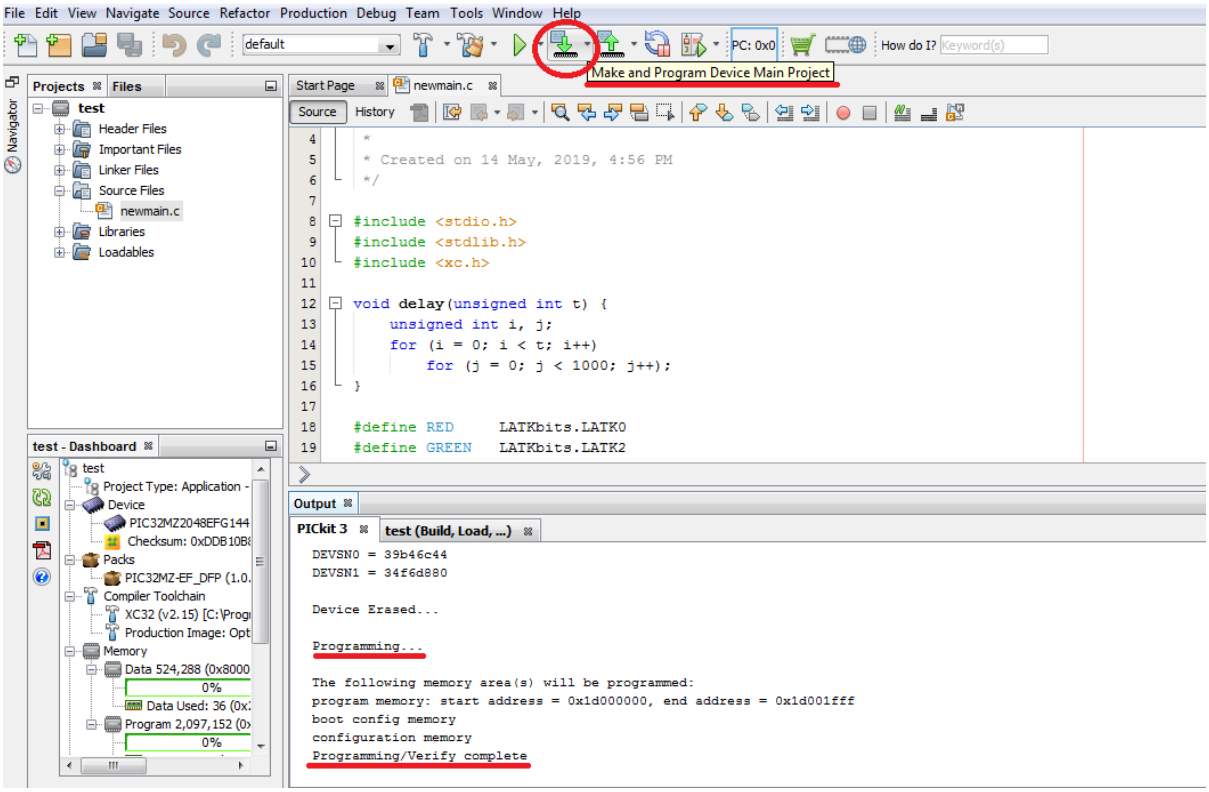


8. Give file name ➔ click on finish

9. Now write c program and build this program.



10. For uploading hex file click on icon (make and program device main project)



PIN CONFIGURATION

SV1:

VCC	GND
RA4	RA5
RA6	RA7
RA9	RA14
RA15	RB13

SV2:

VCC	GND
RB0	RB1
RB3	RB4
RB8	RB9
RB10	RB11

SV3:

VCC	GND
RD0	RD2
RD3	RD4
RD5	RD6
RD9	RD10

SV4:

VCC	GND
RE0	RE1
RE2	RE3
RE4	RE5
RE6	RE7

SV5:

VCC	GND
RH0	RH1
RH3	RH4
RH5	RH6
RH7	RH8

SV6:

VCC	**GND**
RJ0	**RJ1**
RJ2	**RJ3**
RJ4	**RJ6**
RJ7	**RJ8**

SV7:

VCC	**GND**
RK0	**RK1**
RK2	**RK3**
RK4	**RK5**
RK6	**RK7**

SV8:

GND	**VCC**
RC4	**RD12**
RC3	**RD13**
RC2	**RF0**
RC1	**RF1**
RG14	**RF2**
RG13	**RF4**
RG12	**RF5**
RG9	**RF8**
RG1	**RJ9**
RG0	**RJ10**
RH15	**RJ11**
RH14	**RJ12**
RH13	**RJ13**
RH12	**RJ14**
RH11	**RJ15**
RH10	**RH9**