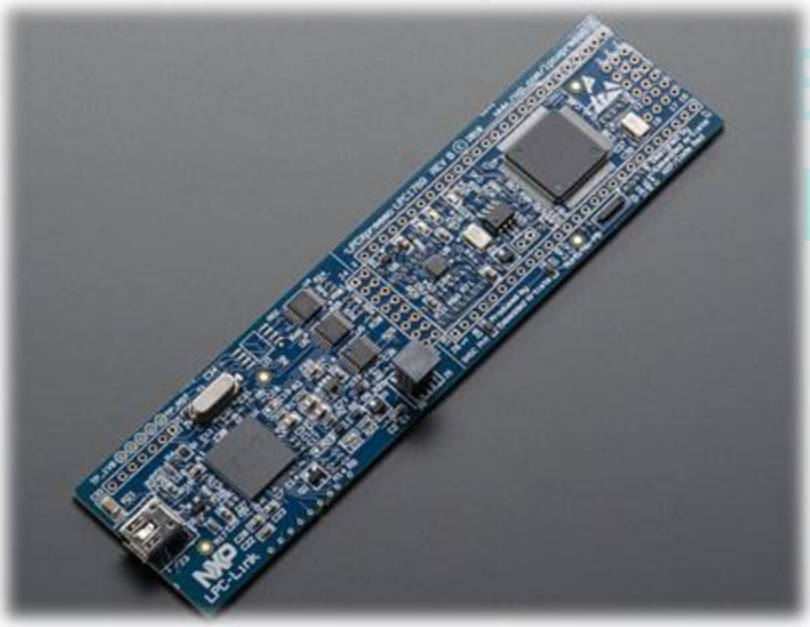
TENET TECHNETRONICS

2016

Seven Segment Display with NXP LPC1769 using LPCXpresso



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Reviewers:

Version: 1.0

Step 1: Open LPCXpresso IDE.

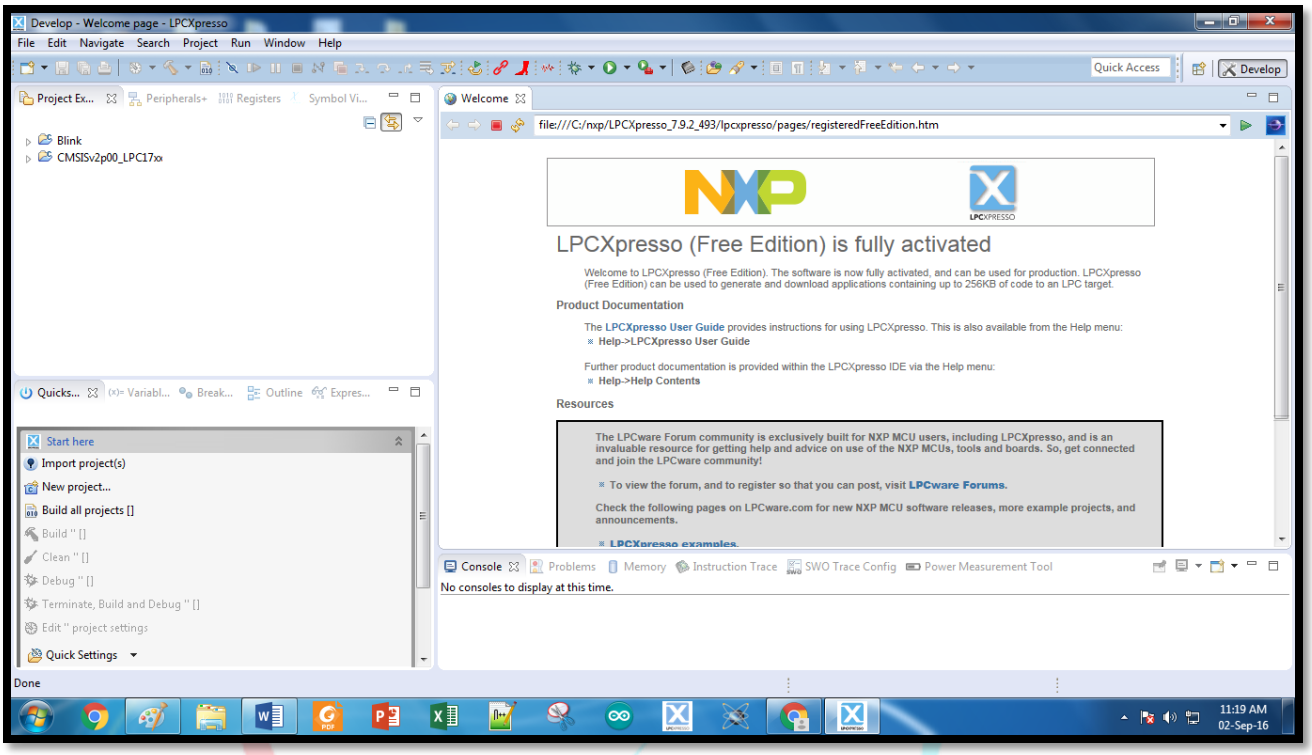

Fig. 1

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Step 2: To create a New project. Go to File >> New >> Project. Select LPCXpresso C project.

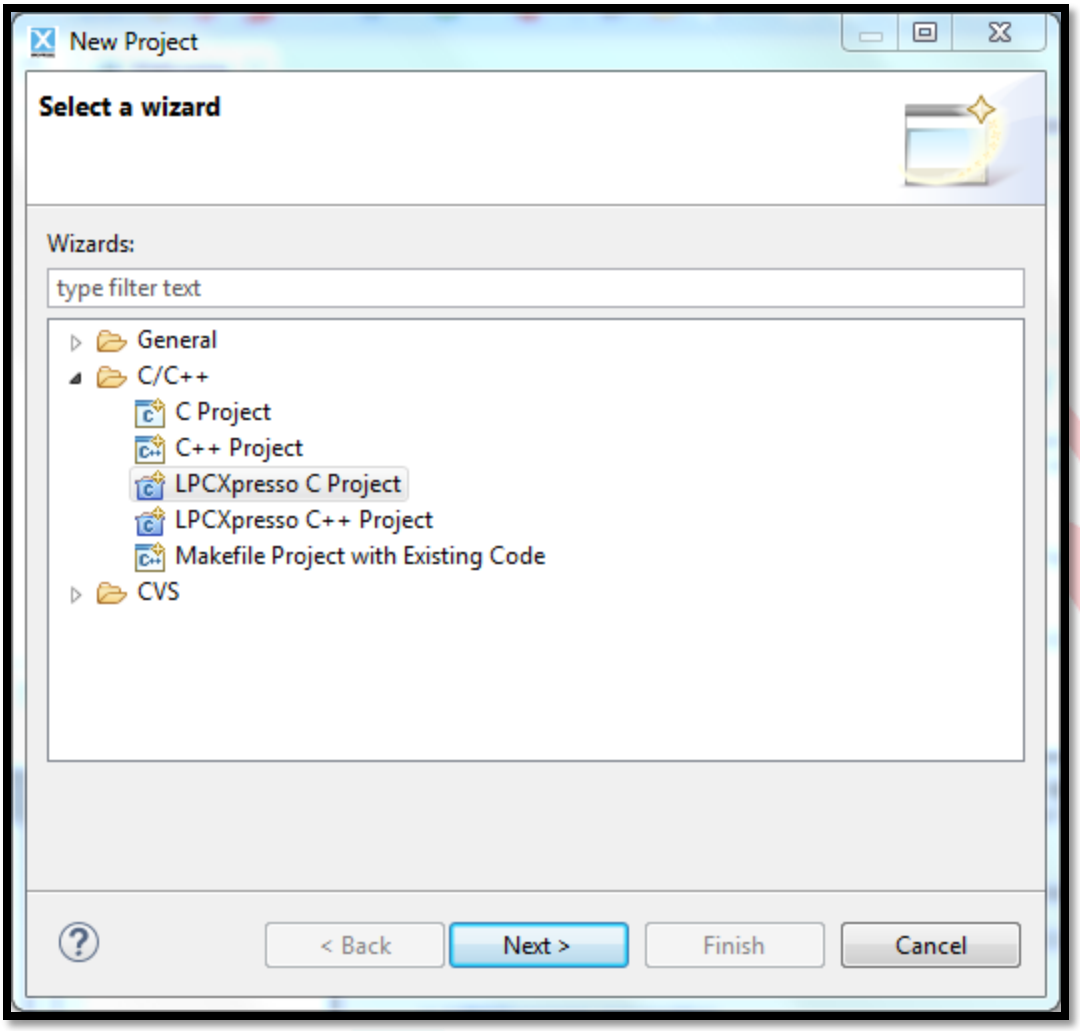

Fig. 2

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Step 3: Select LPC1769, C Project and give name to your project. Select target MCU as LPC1769.

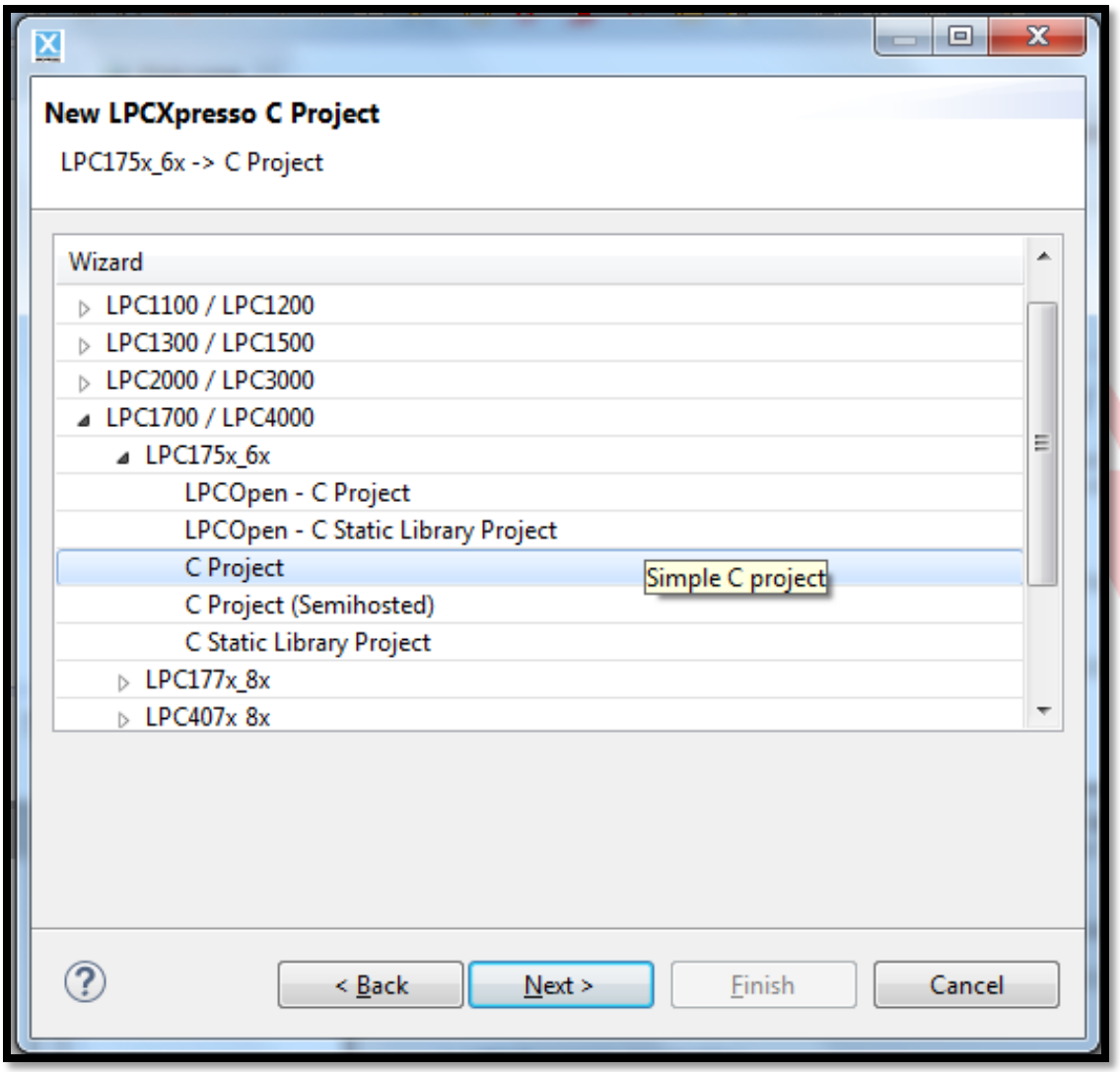

Fig. 3

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Step 4: Now select CMSIS Core library. Click on Next and keep all the other configurations as default and Finish.

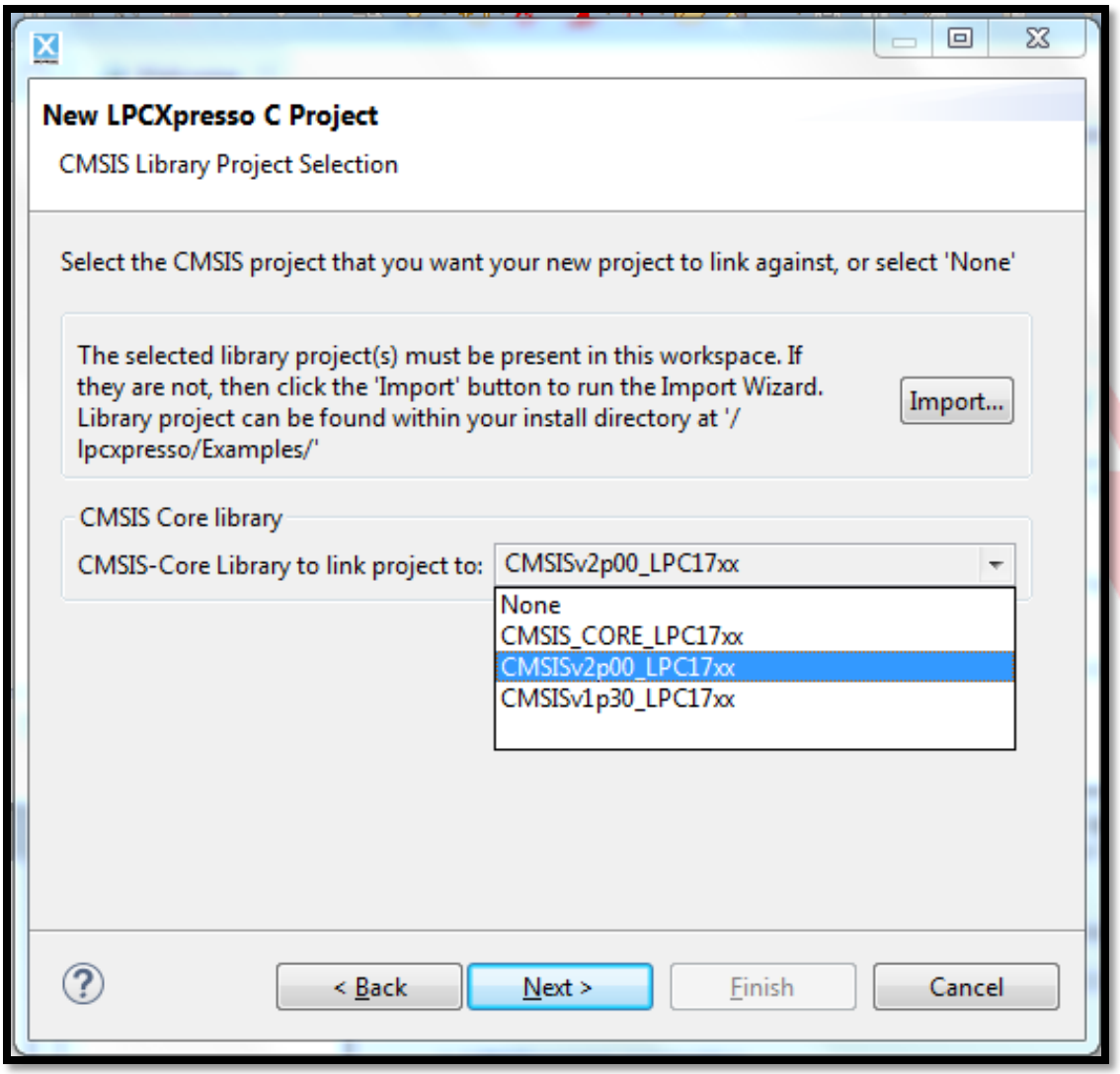

Fig. 4

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Step 5: Now we can see our project onto the workspace. Now by double clicking on Seven_Segment.c file, we can start writing code in an editor window. Here we are going to writing a code for blinking an LED.

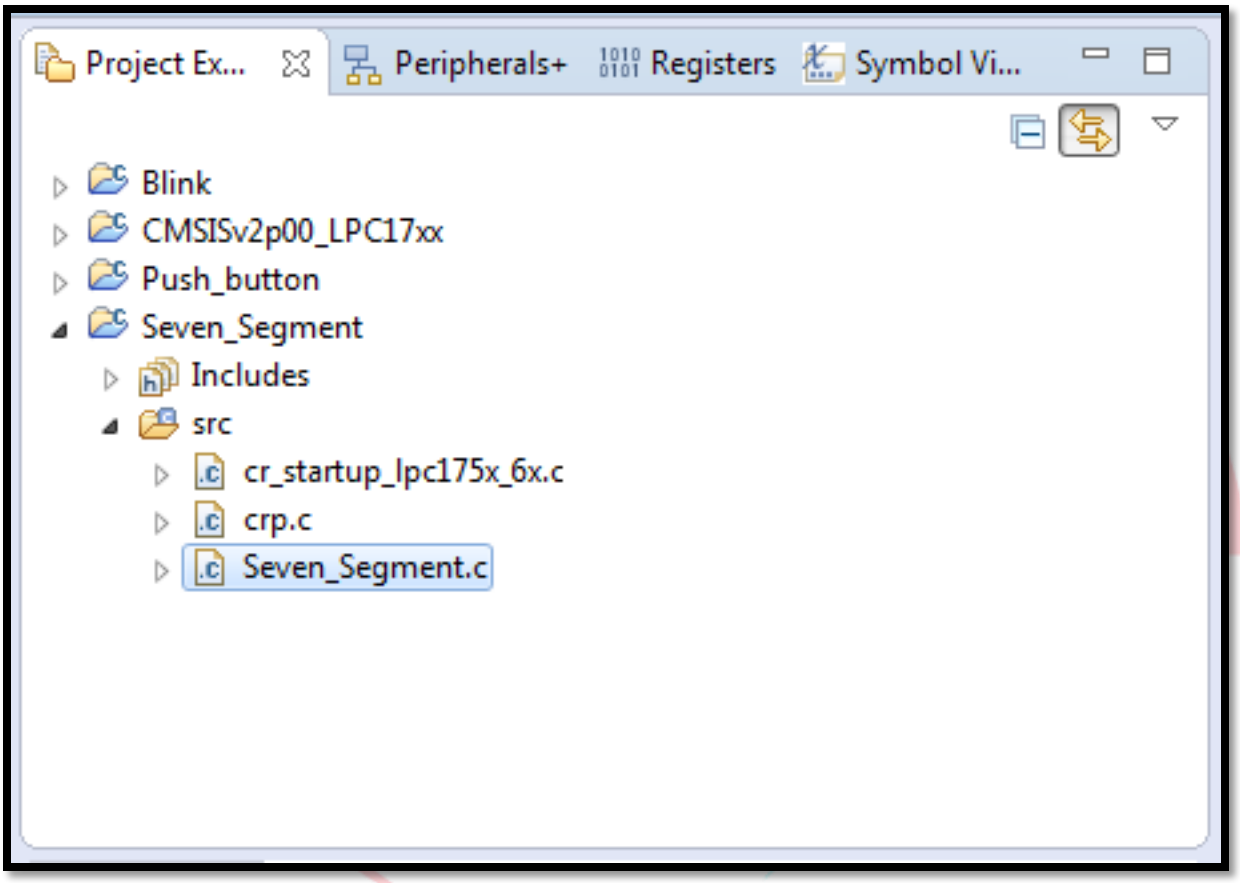

Fig. 5

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Step 6: Write a code as shown below.

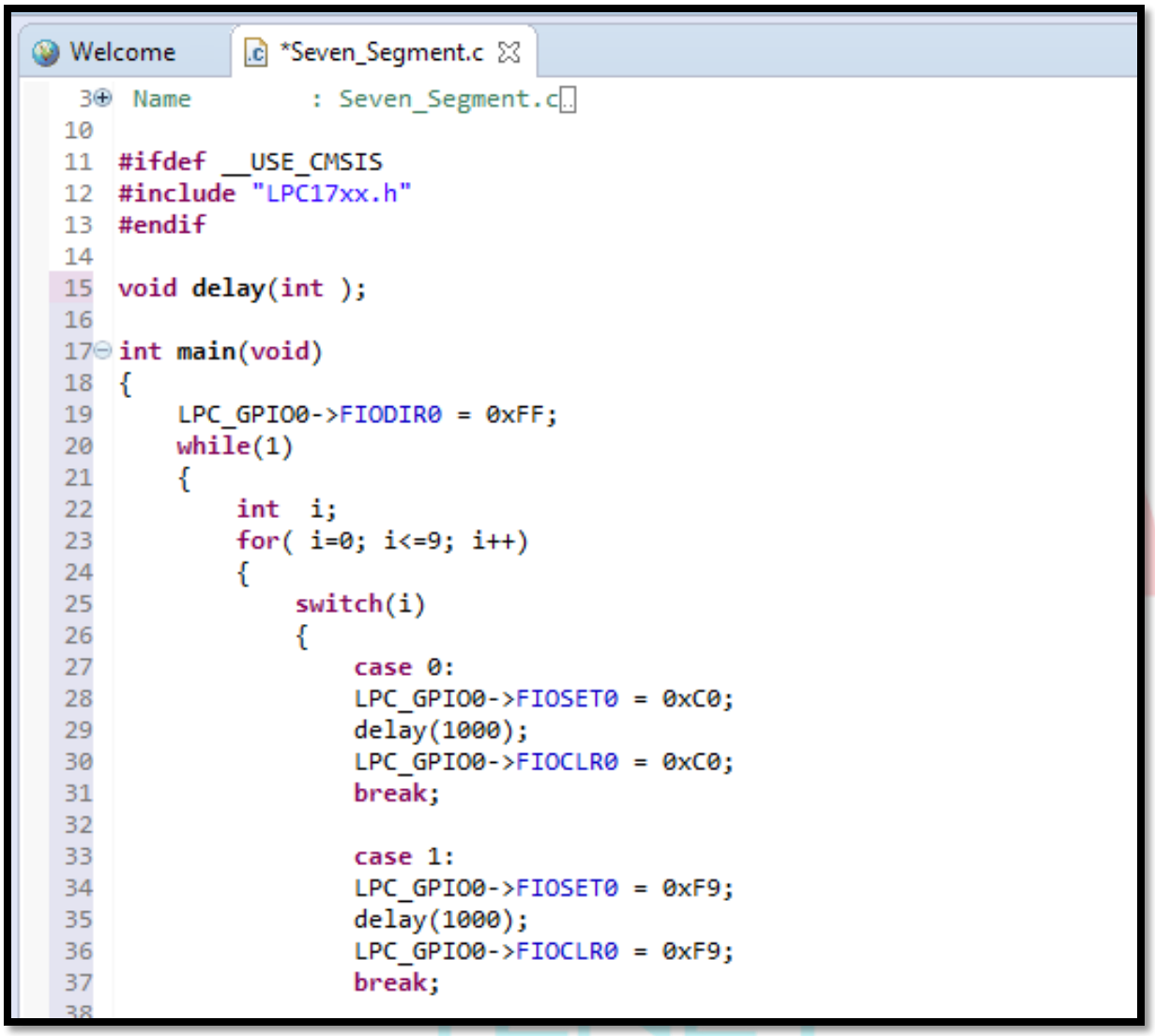

Fig. 6

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CODE:

```
#ifdef __USE_CMSIS
#include "LPC17xx.h"
#endif

void delay(int );

int main(void)
{
   LPC_GPIO0->FIODIR0 = 0xFF;
   while(1)
   {
       int  i;
       for( i=0; i<=9; i++)
       {
            switch(i)
            {
                case 0:
                LPC_GPIO0->FIOSET0 = 0xC0;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0xC0;
                break;

                case 1:
                LPC_GPIO0->FIOSET0 = 0xF9;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0xF9;
                break;

                case 2:
                LPC_GPIO0->FIOSET0 = 0xA4;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0xA4;
                break;

                case 3:
                LPC_GPIO0->FIOSET0 = 0xB0;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0xB0;
                break;

                case 4:
                LPC_GPIO0->FIOSET0 = 0x99;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0x99;
```

```
                break;

                case 5:
                LPC_GPIO0->FIOSET0 = 0x92;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0x92;
                break;

                case 6:
                LPC_GPIO0->FIOSET0 = 0x82;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0x82;
                break;

                case 7:
                LPC_GPIO0->FIOSET0 = 0xF8;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0xF8;
                break;

                case 8:
                LPC_GPIO0->FIOSET0 = 0x80;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0x80;
                break;

                case 9:
                LPC_GPIO0->FIOSET0 = 0x90;
                delay(1000);
                LPC_GPIO0->FIOCLR0 = 0x90;
                break;
            }
        }
    }

return 0 ;
}

void delay(int a)
{
    int i, j;
for(i=0; i<5000; i++)
for(j=0; j<=a; j++);
}
```

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Step 7: After writing code, Build the project by clicking on Build "Seven_Segment", on the Quickstart Panel on the bottom left of the window.

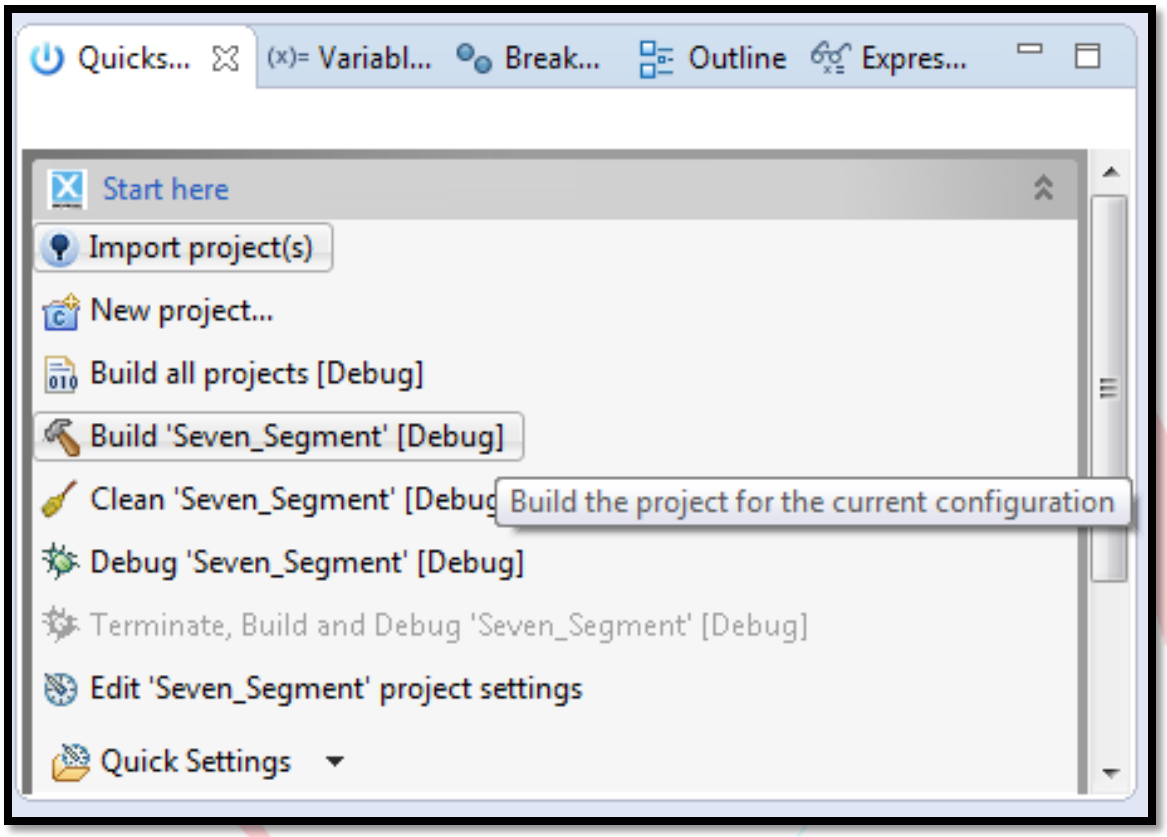

Fig. 7

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Step 8: Now, if everything goes well, connect the USB cable to LPC1769 and connect it to your computer. To upload the project file, click on the Program flash.

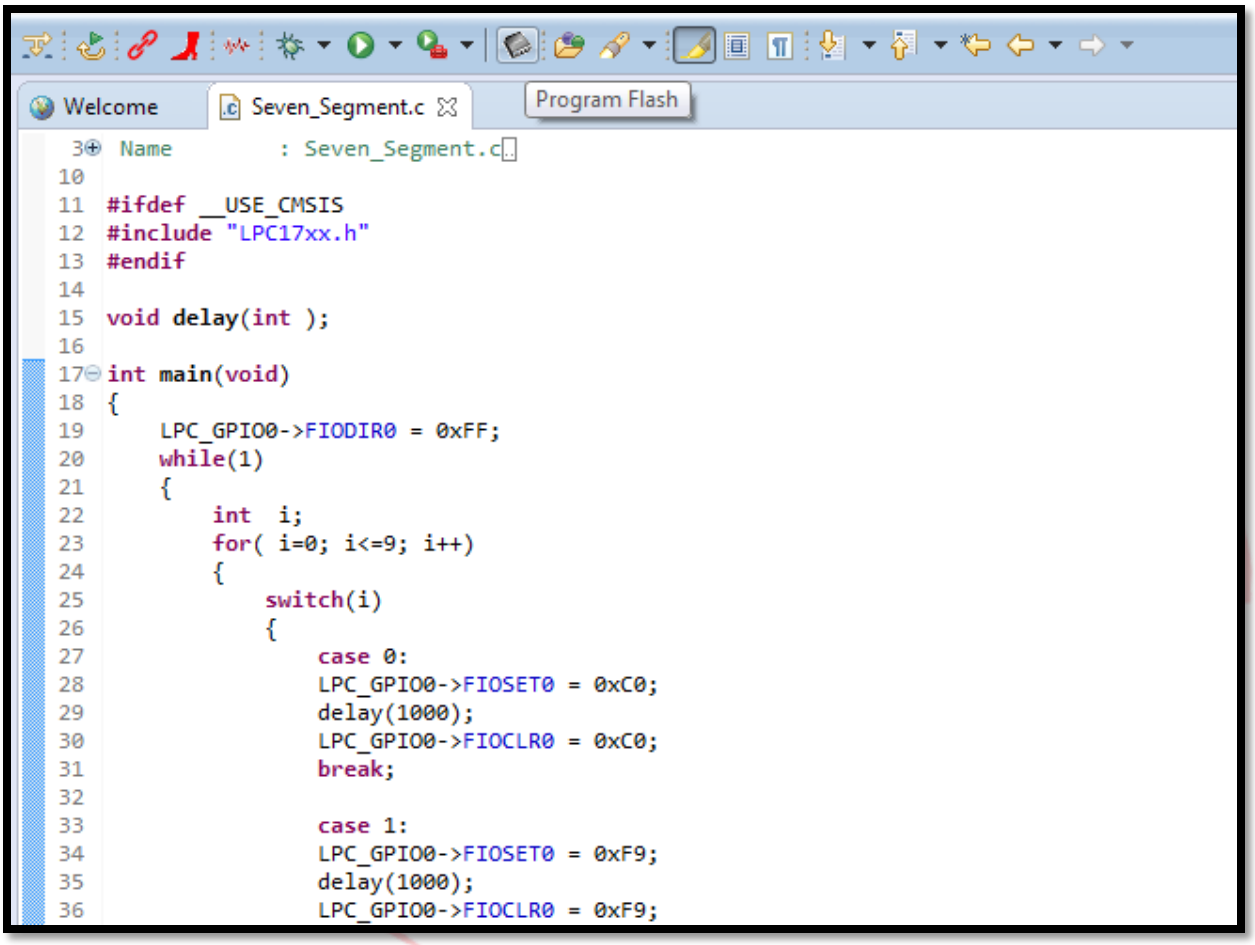

Fig. 8

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Step 9: Now select the Project file Seven_segment.axf. We can find it in a Debug folder of our project folder.

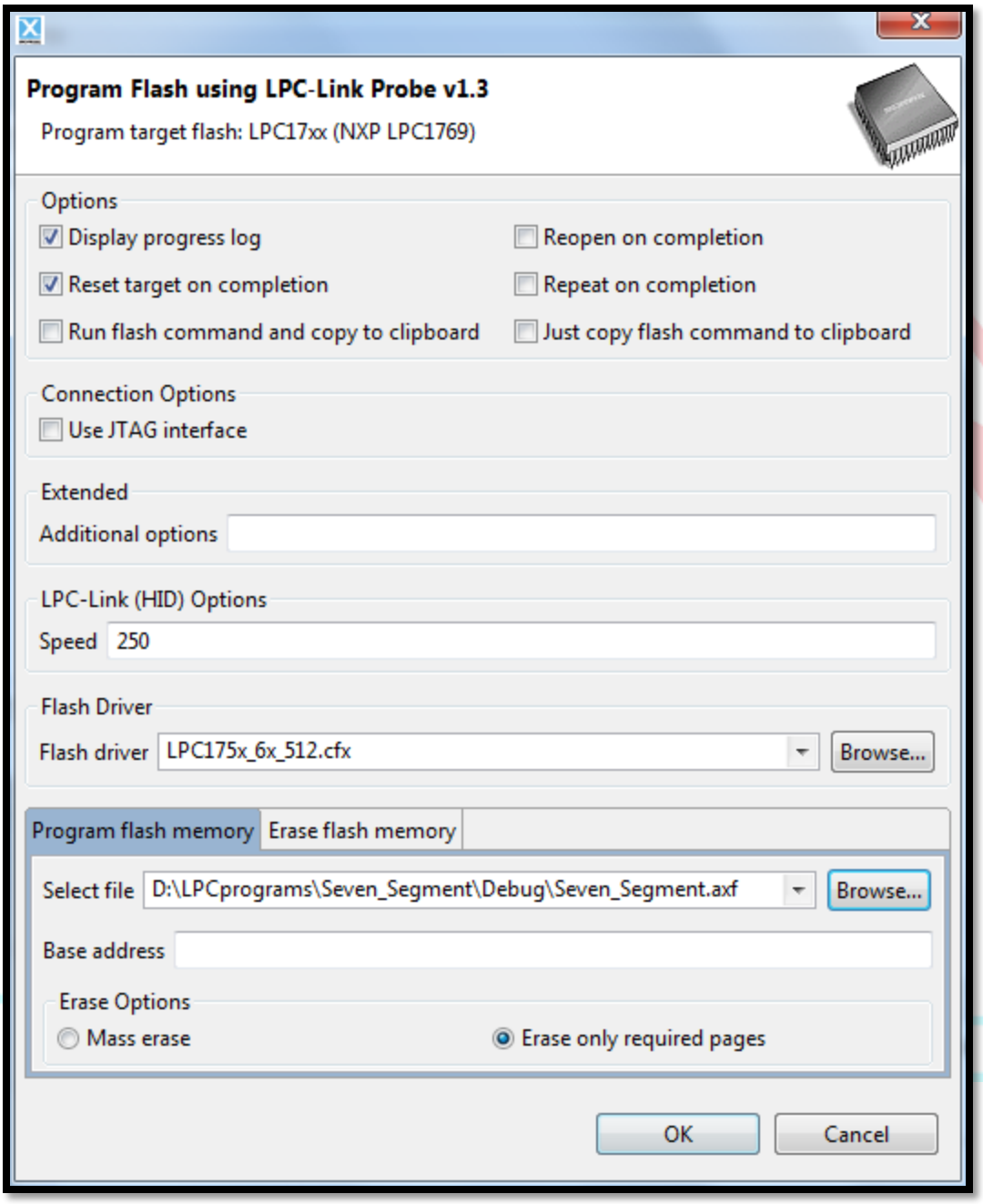

Fig. 9a

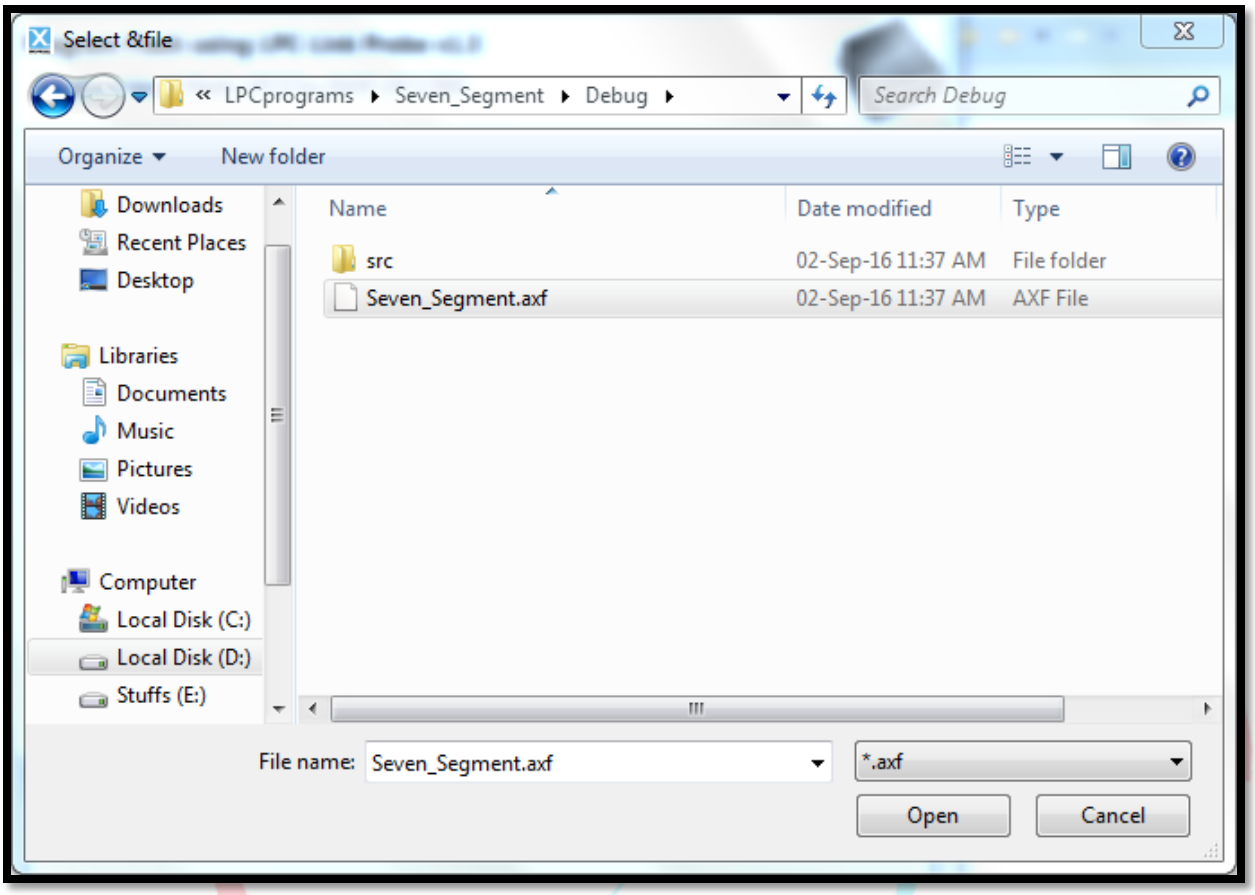

Fig. 9b

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Step 10: Now this window shows we have finally dumped our code into LPC1769.

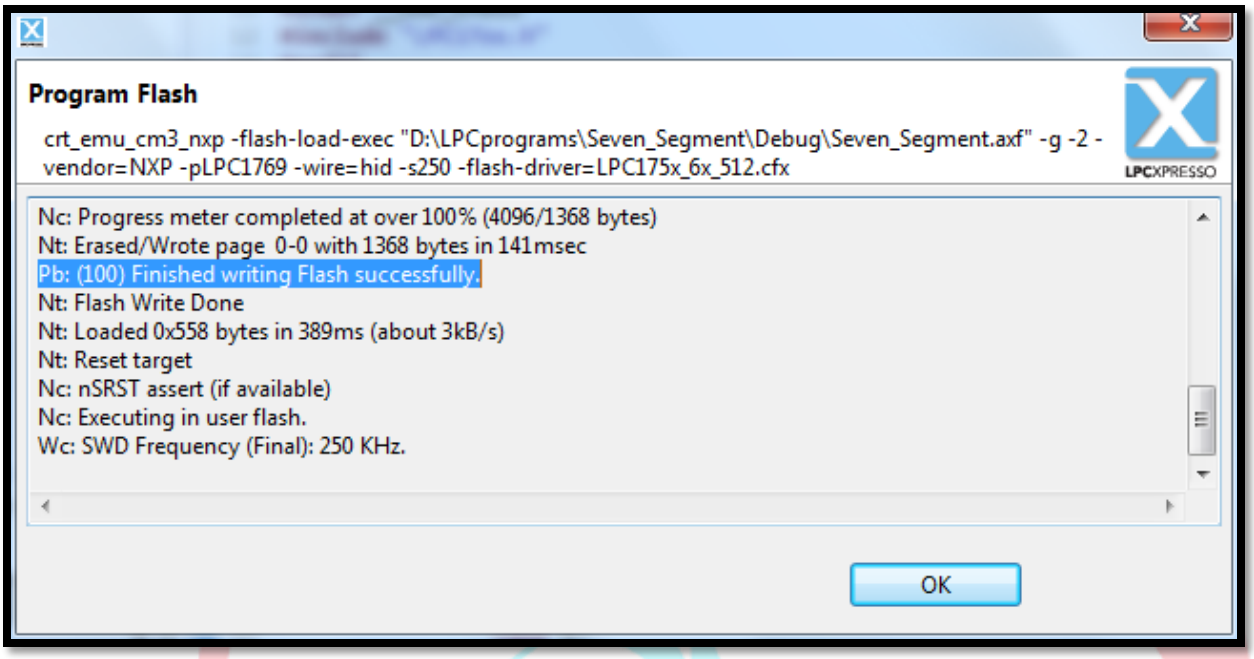

Fig. 10

CIRCUIT EXPLAINATION:

Before connection we should be aware of what common anode and common cathode means. As shown in the figure, in common anode we can turn ON a segment by driving a logic 0. And in common cathode we can turn ON a segment by driving a Logic 1. We have used common anode in this project. As you can see table below, to turn ON a specific LED we drive logic 0.

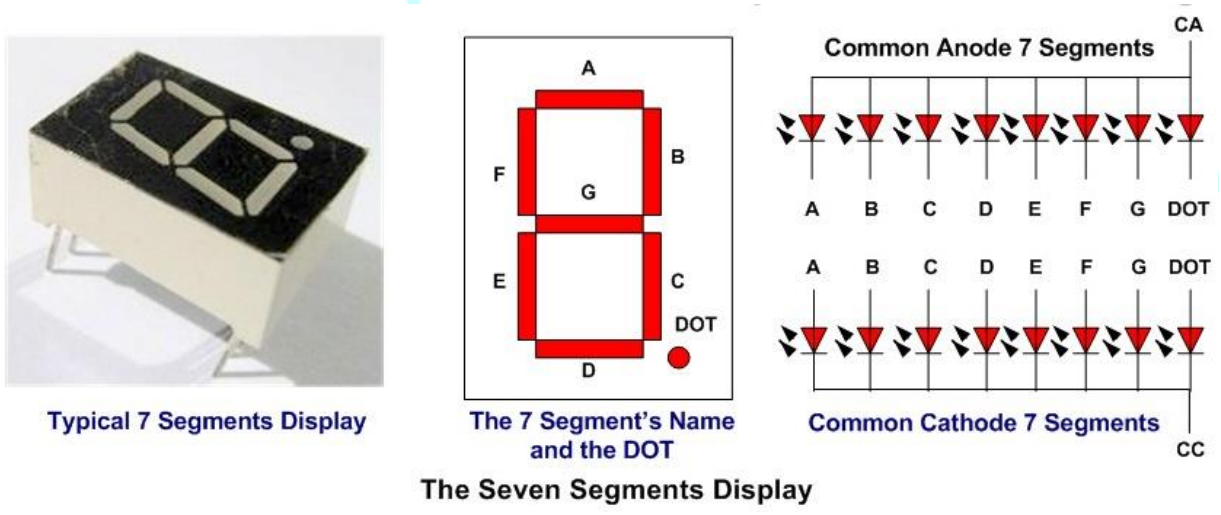

Fig. 11

COMMON ANODE CONFIGURATION

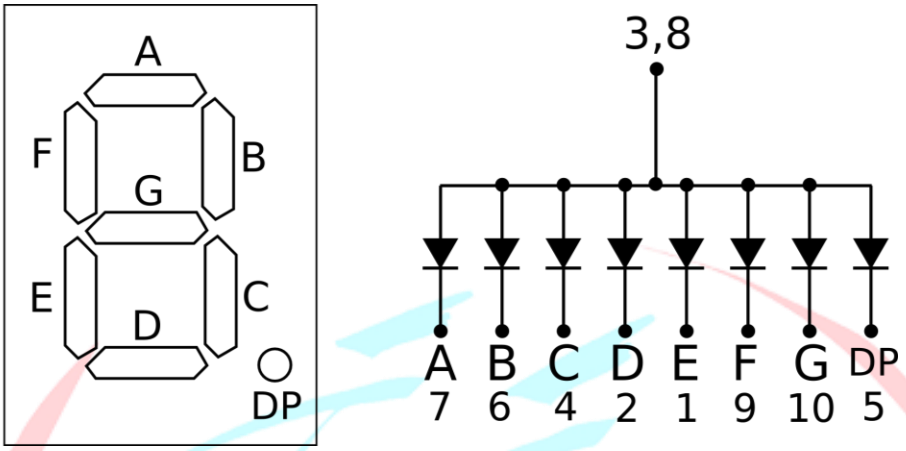

Fig. 12

Display number	DP (P0.7)	G (P0.6)	F (P0.5)	E (P0.4)	D (P0.3)	C (P0.2)	B (P0.1)	A (P0.0)	Hex values
0	1	1	0	0	0	0	0	0	0xC0
1	1	1	1	1	1	0	0	1	0xF9
2	1	0	1	0	0	1	0	0	0xA4
3	1	0	1	1	0	0	0	0	0xB0
4	1	0	0	1	1	0	0	1	0x99
5	1	0	0	1	0	0	1	0	0x92
6	1	0	0	0	0	0	1	0	0x82
7	1	1	1	1	1	0	0	0	0xF8
8	1	0	0	0	0	0	0	0	0x80
9	1	0	0	1	0	0	0	0	0x90

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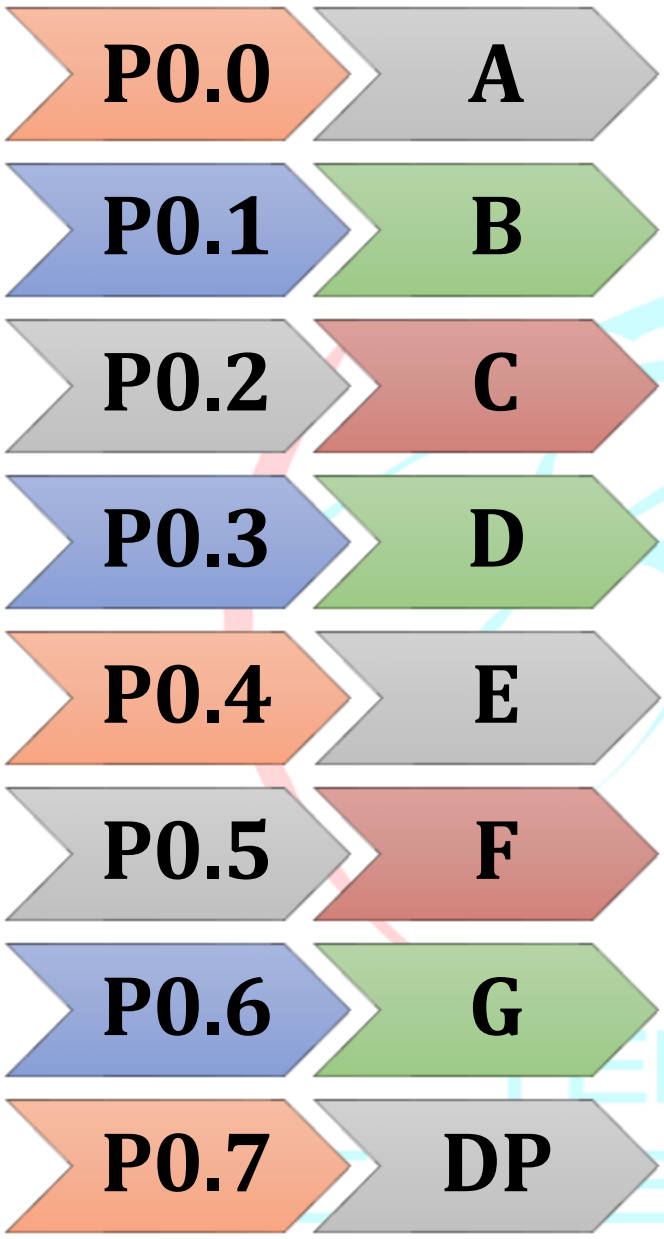
PIN DETAILS:



OUTPUT:

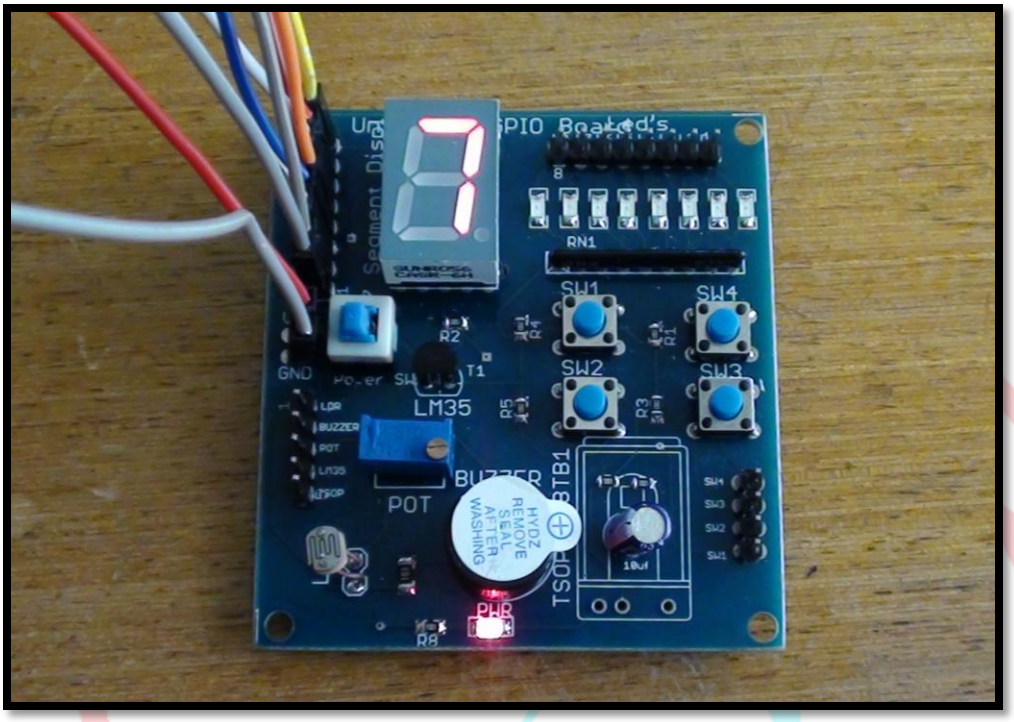


Fig. 13

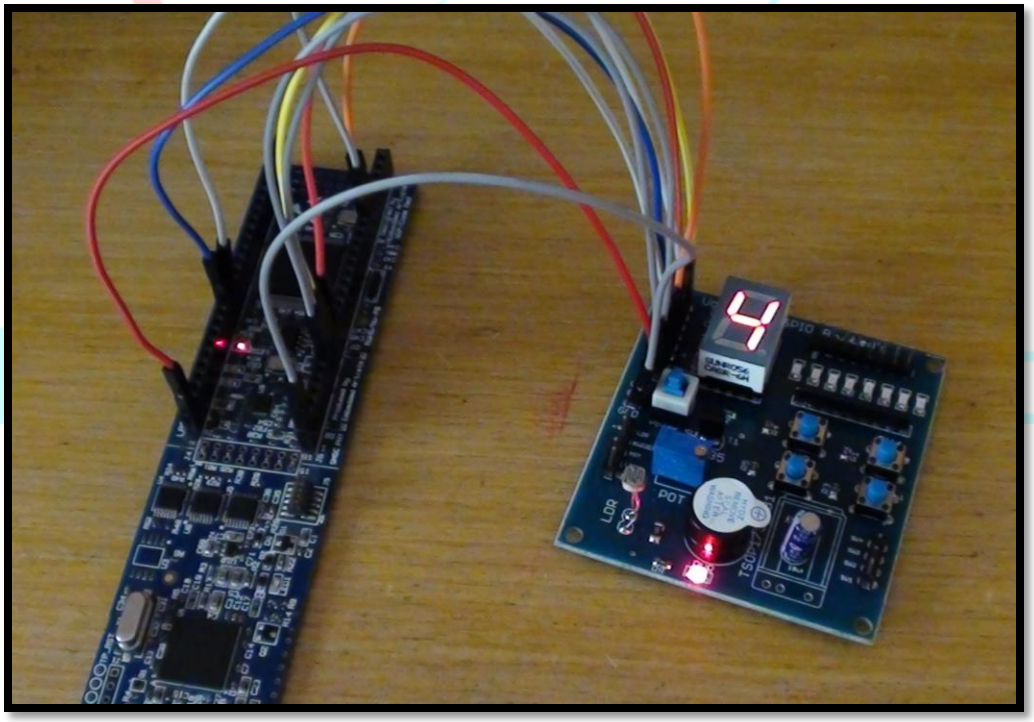


Fig. 14

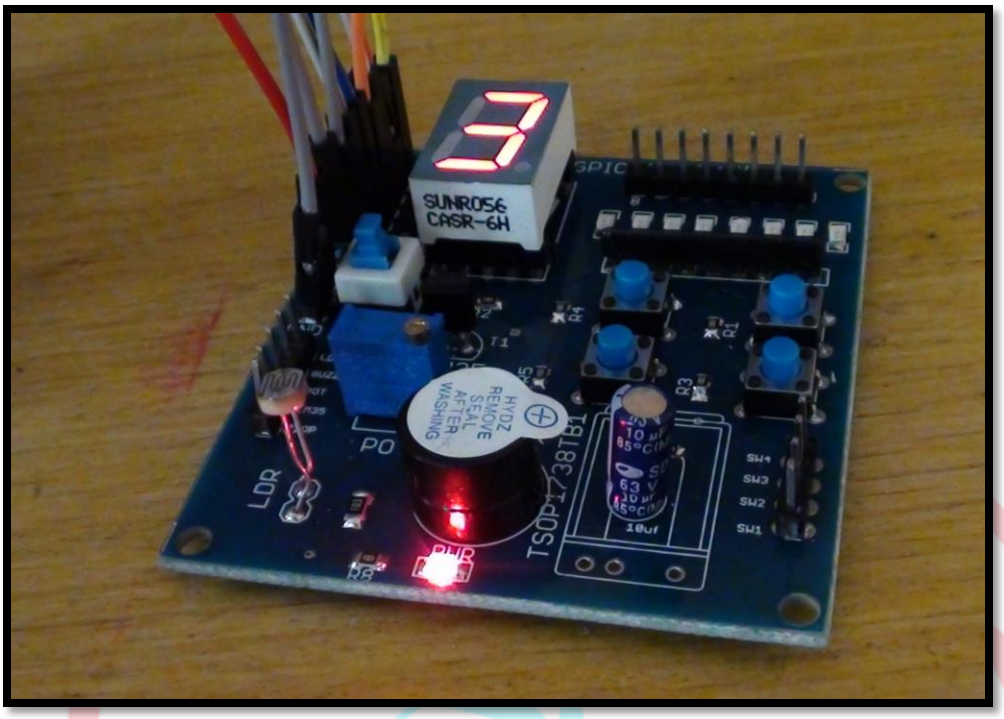


Fig. 15

For product link:

1. http://www.tenettech.com/product/1548/lpc1769-lpcxpresso-board
2. http://tenettech.com/product/6655/universal-gpio-board

For more information please log on to www.tenettech.com

For technical query please send us an e-mail: info@tenettech.com

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