

Ex.No.12 Basic Arithmetic & Logical operations using Keil's software

12.1 Introduction:

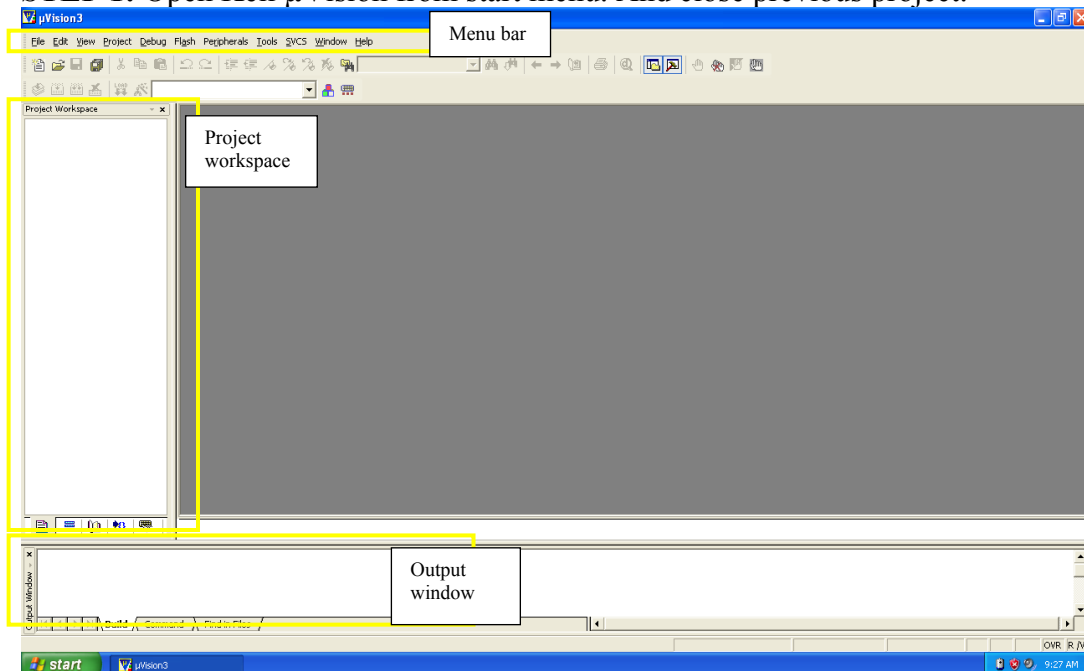
The purpose of this experiment is to introduce Keil IDE for writing and simulating assembly level programs for 8051 microcontroller.

12.2 Hardware and Software Requirement:

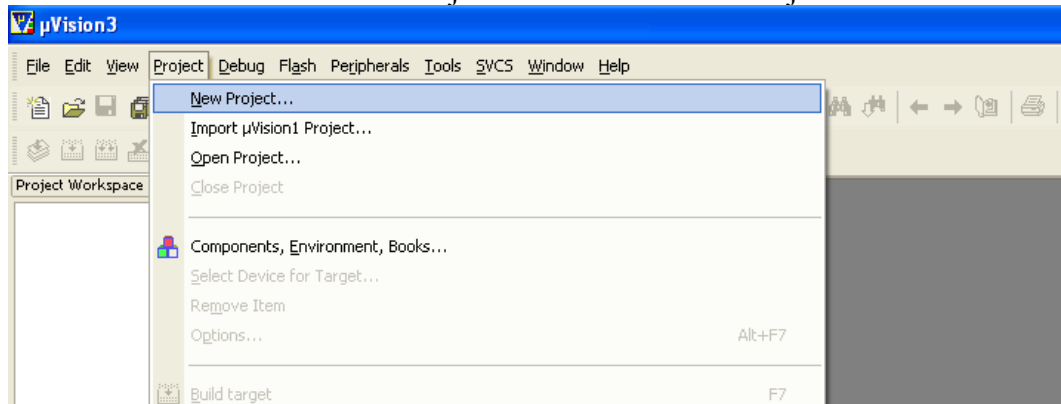
A desktop or laptop with Keil4.

12.3 Keil procedure:

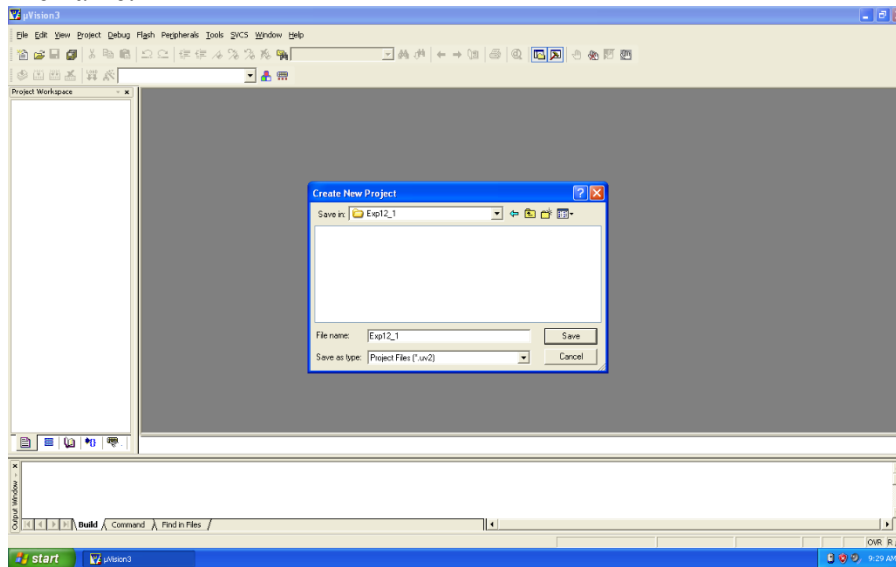
STEP 1: Open Keil μ Vision from start menu. And close previous project.



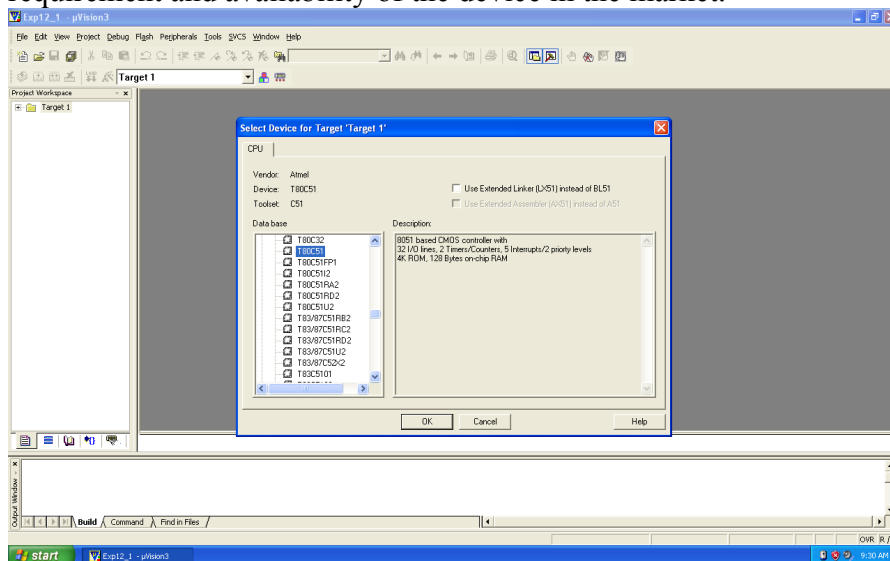
STEP 2: From menu bar click Project tab and click New Project.



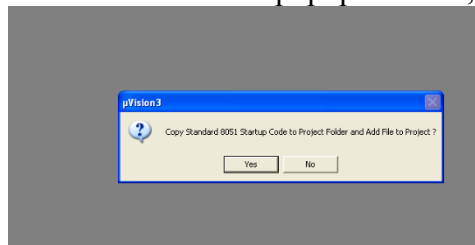
STEP 3: Create a separate folder for each project and create the project by entering project file name.



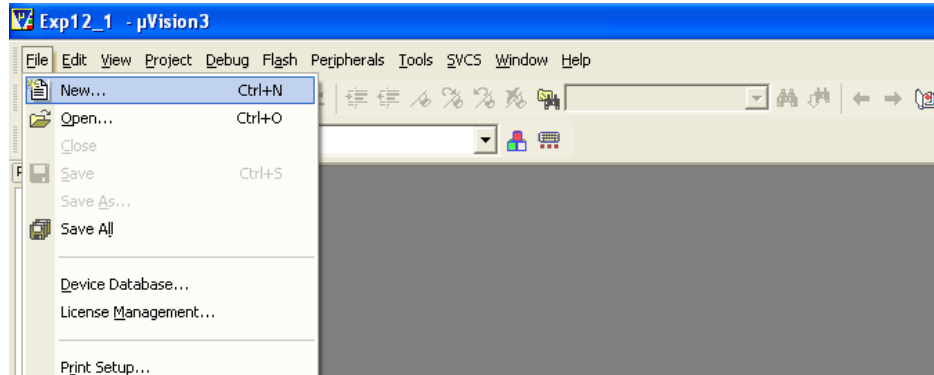
STEP 4: In the popup window select the target device from the list based on the project requirement and availability of the device in the market.



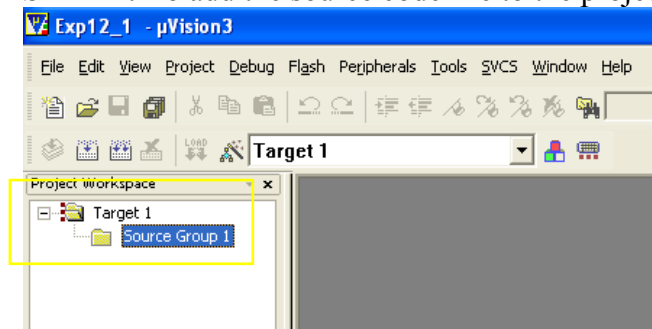
STEP 5: In the next popup window, click “NO” to Startup code.



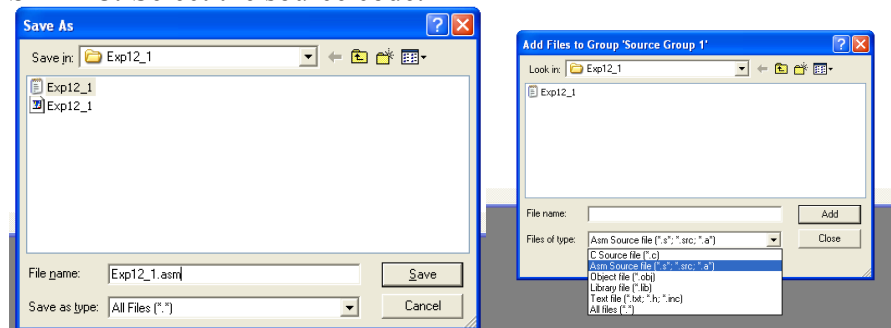
STEP 6: Create a source code file and save it in the same folder as *.asm.



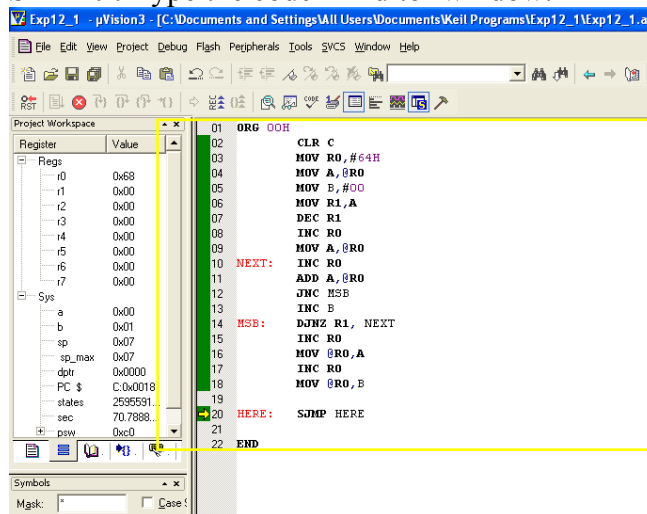
STEP 7: To add the source code file to the project, double click on “Source Group1”.



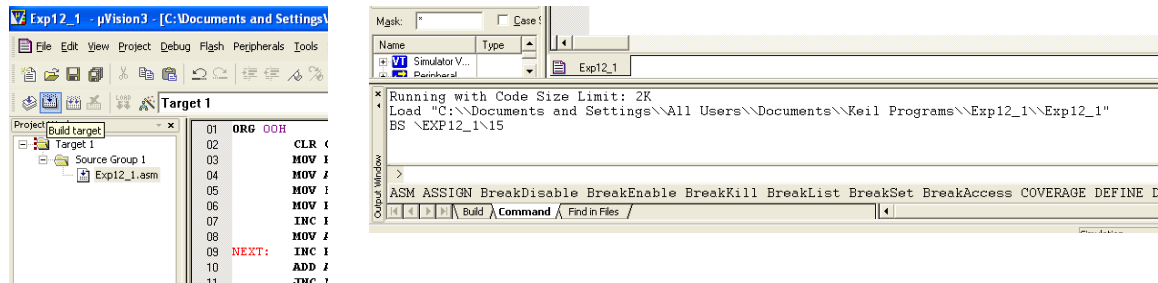
STEP 8: Select the source code.



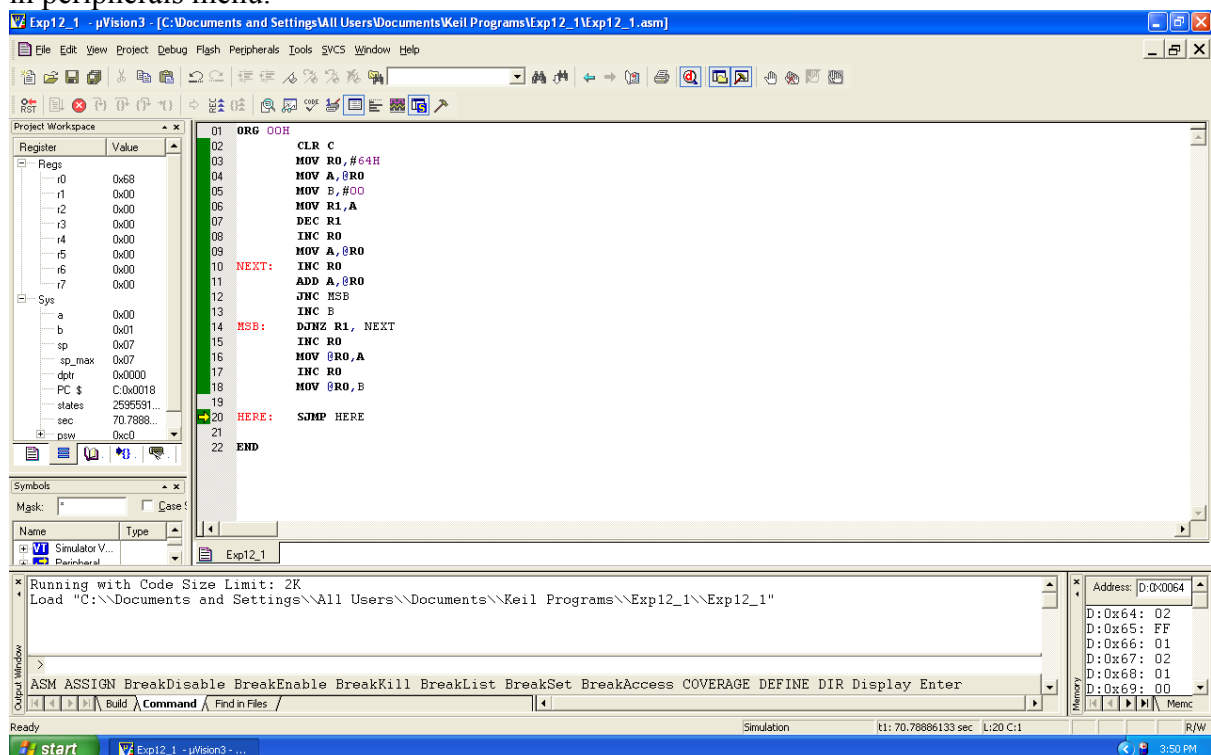
STEP 9: Type the code in Editor window.



STEP 10: Compile the code with clicking “Build target” button. And look for compiler output in “Output window”. If there is error check the corresponding line and correct the error.



STEP 11: When no error or warning in the output window click debug button and enter the data in memory window. Then execute the code with clicking run button and verify the result in peripherals menu.



12.4 Program:

To perform sum of “N” numbers.

ORG 00H

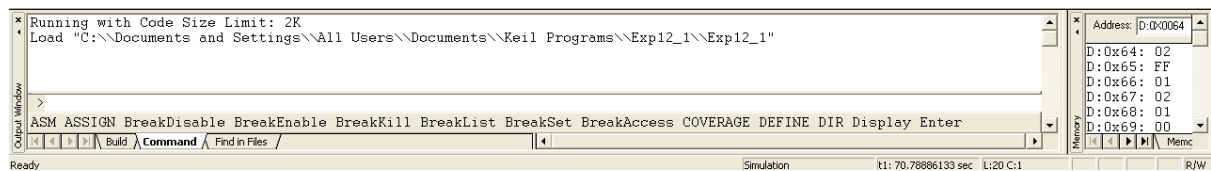
```
CLR C
MOV R0, #64H
MOV A, @R0
MOV B, #00
MOV R1, A
```

```

DEC R1
INC R0
MOV A, @R0
NEXT:  INC R0
      ADD A, @R0
      JNC MSB
      INC B
MSB:   DJNZ R1, NEXT
      INC R0
      MOV @R0, A
      INC R0
      MOV @R0, B
HERE:  SJMP HERE
END

```

Observation



12.5 Pre-Lab Questions:

1. How can we change the register banks in 8051?
2. Write an ALP to read a data from PORT0 and mask the lower nibble. Send the result to PORT1.

12.6 Post-Lab Question:

1. What is breakpoint? How to use in debugging the code?
2. What is the RAM, ROM utilization for the experiment codes?
3. Fill the table

| Sl.no | IC No | RAM size | Flash memory size | Key peripherals available |
|-------|-----------|----------|-------------------|---------------------------|
| 1 | T80C51 | | | |
| 2 | T89C51AC2 | | | |
| 3 | T8xC5121 | | | |
| 4 | P83C562 | | | |
| 5 | P89V51RC2 | | | |

12.7 Result:

