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Computer Organization and Programming
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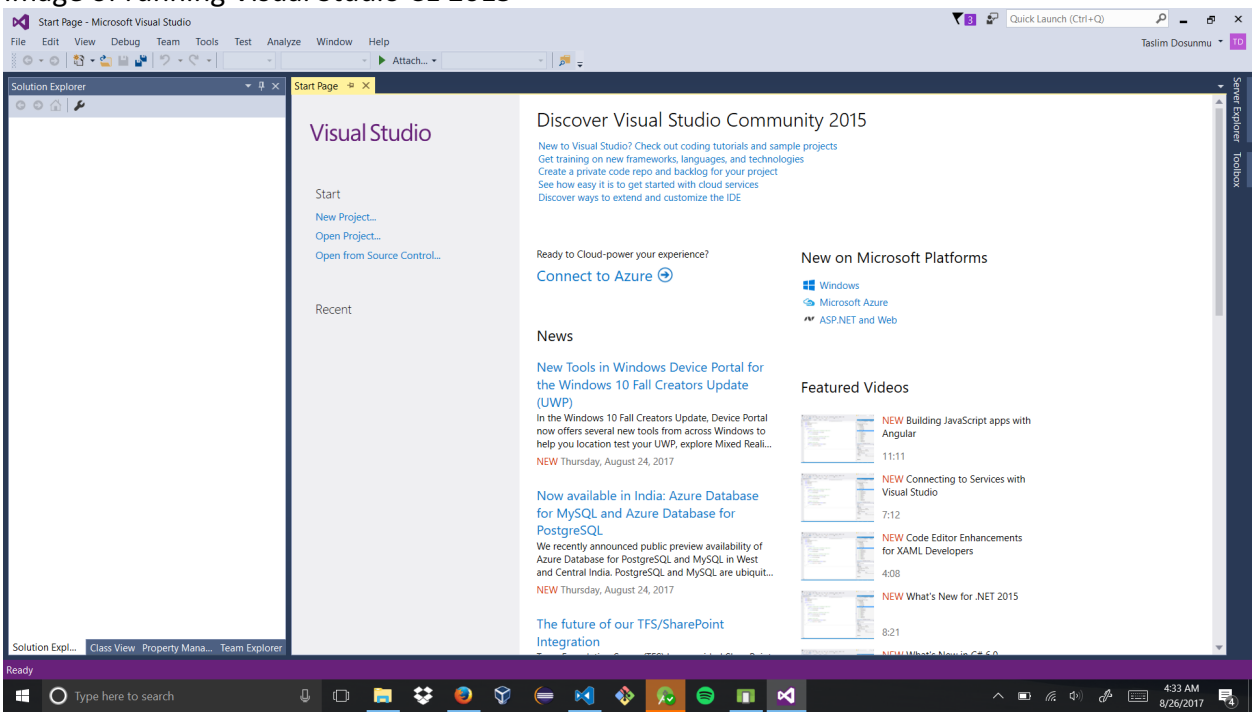
Assignment 1

1. Image of running Visual Studio CE 2015



2. An assembly program produced using a Mac would not be able to run on an HP computer even if they are both using an Intel processor. This is because the assembler used for each: NASM for Mac, and MASM for HP respectively, do not translate the same way.

3.

carry: 111
  10101011
+11110000
=**10011011** with **1** in **CF**

4. It is not possible to perform the operation -9 - 2 on a 4 bit machine architecture. The minimum value possible with signed 4 bit architecture is -2^3 = -8. -9 is less than -8 and therefore, out of range.

5. 1243E8CF -> 12 43 E8 CF -> 0001 0010 0100 0011 1110 1000 1100 1111 -> **00010010010000111110100011001111**

6. -29 ->
   2's complement:

   _ _ _ _ _ _ _ _ 128 64 32 16 8 4 2 1
   0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 1 (represent 29)
   1 1 1 1 1 1 1 1 1 1 1 0 0 0 1 0 (flip bit values)
   1 1 1 1 1 1 1 1 1 1 1 0 0 0 1 1 (add 1)

   1111 1111 1110 0011 -> FF E3 -> **FFE3**

7.
   a) 10110101
      10110110 (add 1)
      01001001 (flip bit values)
      answer: **-73**
   b) 01110111 -> 1 + 2 + 4 + 16 + 32 + 64 -> **119**

8.
   a) carry: 111
        8CF
      + AD1
      =**13A0**
   b) carry:101
        D49
      + 7AB
      =**14F4**
9. largest value for signed 86 bit Integer: 2^{85}-1