



Capital University of Science and Technology

Department of Computer Science

CS 2523 – Computer Organization and Assembly Language

QUIZ NO. 3: Data Representation, Flags

CLO: 2. Describe how the basic units of the Intel 8088 architecture work together to represent Integer Numbers, Floating Numbers and register representation inside the microprocessor.

[C2- Understanding]

Semester: Summer 22

Max Marks: 10

Instructor: Ms. Tayyaba Zaheer

Date: August 17, 2022

Max Time: 10 Minutes

Name:

Reg. No.

Question No.1 [04 Marks]

Write the 2's complement of 92F0 [Hint: 2's complement of Hexadecimal]

Solution:

To form the two's complement of a hexadecimal

- Subtract each hexadecimal digit from 15
- Add 1

2's complement of 92F0 = 6D0F + 1 = 6D10

Question No. 2 [06 Marks]

The address of var1 is 00400B20. The address of the next variable after var1 is 0040A06C. How many bytes are used by var1?

Solution:

0040A06C – 00400B20; (Hexadecimal subtraction)

Two's complement of 00400B20;

$$15 - 0 = 15 = F$$

$$15 - 2 = 13 = D$$

$$15 - B = 15 - 11 = 4$$

$$15 - 0 = F$$

$$15 - 0 = F$$

$$15 - 4 = 11 = B$$

$$15 - 0 = F$$

$$15 - 0 = F$$

FFBFF4DF + 1 ⇒

$$\begin{array}{r} \textit{FFBFF4DF} \\ +00000001 \\ \hline \textit{FFBFF4E0} \end{array}$$

Two's complement of 00400B20 = *FFBFF4E0*

0040A06C − 00400B20 = 0040A06C + *FFBFF4E0*

$$\begin{array}{r} 0040A06C \\ +\textit{FFBFF4E0} \\ \hline 0000954C \end{array}$$