**Arab Academy For Science and**

**Technology & Maritime Transport**

**College of Computing and Information Technology **

Course Title: System Programming

Course Code: CC410 – **Quiz 1**

**Date:** Mon. March, 16-2015 **Lecturer:** Dr. Manal Helal

**Time allowed:** 10 mins  **Start Time:** 2:30 p.m. **Marks:** 3

**Generate the object code for the following SIC source program. Fill the LOCCTR and the OPCODE Columns in the given table.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **LOCCTR** | **Label** | **Operation** | **Operands** | **OPCODE** |
| 1000 | SUM | START  | 1000 |  |
| 1000 | FIRST | LDX  | ZERO | 04 3340 |
| 1003 |  | LDA | ZERO | 00 3340 |
| 1006 | LOOP | ADD  | TABLE,X | 18 [[1]](#footnote-1)9015 |
| 1009 |  | TIX | COUNT | 2C 333D |
| 100C |  | JLT | LOOP | 38 1006 |
| 100F |  | STA | TOTAL | 0C 3343 |
| 1012 |  | RSUB |  | 4C 0000 |
| 1015 | TABLE | RESW  | 2328 |  |
| 333D[[2]](#footnote-2) | COUNT | RESW  | 1 |  |
| 3340 | ZERO | WORD | 0 |  |
| 3343 | TOTAL | RESW | 1 |  |
| 3346 |  | END | FIRST |  |

**Fill the basic contents of the Symbol Table**

|  |  |
| --- | --- |
| SUM | 1000 |
| FIRST | 1000 |
| LOOP | 1006 |
| TABLE | 1015 |
| COUNT | 333D |
| ZERO | 3340 |
| TOTAL | 3343 |

1. In ADD TABLE, X, ADD is 18, TABLE is in 1015, which is binary: 0001000000010101 , but then the flag x is on to indicate that we need to Add the X register content, becomes binary: 1001000000010101, which is hex: 9015 [↑](#footnote-ref-1)
2. Added to the location counter the number of words reserved in the previous instruction [↑](#footnote-ref-2)