

8) (10 points) Assume the declaration `int i=3, j=9;` What is the value of `i` and `j` after the following instruction executes: `j=i++;`

Answer:

<code>i = 4</code> <code>j = 3</code>
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 (5 points each value)

9) (10 points) Assume the declaration `int i=3;` What is the value of `i` after the following instruction executes: `if (i=5) printf("go49ers!");` Will "go49ers!" be printed?

Answer:

<code>i = 5,</code> Yes, the line will be printed
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 (5 points each answer)

10) (10 points) Write a loop in C that prints the even numbers between 1 and 101. Use the least amount of code. No comments needed.

Answer:

<pre>for (int i=1; i < 101; i++) { if ((i%2) == 0) printf ("%d", i); }</pre>
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Problem 11: LC-3 instructions (75 points)

a) Without using the input or output TRAPs, write a small LC-3 *program* to read a single character typed on the keyboard, write it back to the console, and halt. Include *ALL* code and data (and addresses) necessary to do this. You do not need to write comments for this problem, but use meaningful labels. Yes, this seems to be a bit silly (a small program reads one character then halts), but I am testing your knowledge of program structure needed. You may use the HALT trap.

b) Write a flowchart for the above problem.

```
a)
        .orig x3000
in      LDI   R7, KBSR
        BRzp in
        LDI   R0, KBDR
out     LDI   R7, DSR
        BRzp out
        STI   R0, DDR
        HALT

KBSR   .FILL xFE00
KBDR   .FILL xFE02
DSR    .FILL xFE04
DDR    .FILL xFE06
        .end
```

- a) Code: 65 points:
- * KBSR/KBDR/DSR/DDR definitions =15
- * .orig/.halt/.end = 10
- * wait loop for input = 10
- * read KBdata = 5
- * wait loop for output = 10
- * write to Display =5
- * No more than 13 lines of code/data =10

b) Flowchart: 10 points
2 for having the start/end, then 2 pts for each of the other blocks

