

Lecture #15 Worksheet, Answer Master

Fill in blanks to answer questions below. Then email this sheet to your TA.

- 1. What are the six basic actions required in writing a loop?**

Entry function (call)

Loop initialization

Loop counter

Loop increment

“Work of loop”

Control or exit function

- 2. What 3 things are being done by the loop program (slide 3)?**

Reversing an ASCII string, removing control characters, and printing out.

- 3. Are data transmissions done with random numbers of characters?**

No. Always a set block size of data.

- 4. As the program starts, where in the buffer does it begin?**

It starts at the end of the buffer.

- 5. What does the program do with a transmission control character?**

It leaves it out.

- 6. As the program encounters printable characters, what does it do?**

It stores them in reverse order in the print string.

- 7. What is the purpose of register \$t0?**

It points to the character in the buffer (received data) being analyzed.

- 8. What is the purpose of register \$t1?**

It is the pointer to the next character space in the print buffer.

- 9. What are registers \$t2 and \$t3 used for?**

\$t2 counts passes through the loop, and \$t3 holds the character being analyzed.

Study the loop and then answer the following questions:

10. In the loop, if the five branches are not taken, what is done with the character?

It is stored in the display (or print) buffer.

11. What happens at “next?”

At “next,” the loop has tested one character, so it checks the counter, and if 96 characters have not been analyzed, it increments the \$t0 pointer and starts over.

12. When the 96 characters have been analyzed, what happens next?

The program prints out the message and ends.

13. Explain what “nested” loops are.

A pair of “nested” loops are a loop within another loop.

14. In the nested loop problem, what is the program doing?

It is populating a determinant’s array values with a constant number.

15. As the nested loop completes its problem, what does the inner loop accomplish?

It places the constant value in every column of a row.

16. What does the outer loop do?

It changes rows, so that each row has the 20 column values inserted.

17. What is meant by the program “mapping” a determinant.

It puts the rows and columns into a linear memory array.

18. How is the memory address of a determinant element calculated?

The base address (bottom array address) is added to the number of rows above the bottom row times 80 bytes plus the number of columns past the left column time 4 bytes.

19. Copy the program into your computer and run it, then verify below that the program has run.

Program ran. ____X____

20. Carefully read the notes on Program 4, then write and run it. If you are having too much trouble, copy the answer given and run it, but try first on your own.

Program completed. ____X____

21. Optional: From Slide 30, write the program analyzing the hex word shown, counting the 8's. No answer provided, so you are on your own!