CS-450 & CS-550: *Operating Systems,* Sections 1 & 2
Fall 2008: Quiz # 3
ANSWERS

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INSTRUCTIONS: (1) Closed book, closed notes (but open mind), <u>*NO*</u> calculators allowed.
(2) For each question, **circle** the identifying letter next to the choice corresponding to your answer, or fill in the blank, as appropriate.*
(3) You will not get credit for your grade unless you sign the Honor Code declaration on the back of this page(this is a JMU requirement).
(4) You must also print your name legibly *on the back of this page sheet*, so that I know who you are, and <u>also</u> write the **last four digits only** of your JMU ID number in the indicated location on the back of the page.
(5) For any questions requiring calculation, you must show all your work. If you perform your calculation on sheet(s) of paper not part of the exam, then you must write your name **legibly** on all such sheets and hand them in together with your exam.

1. A certain computer is equipped with an Operating System (OS) that implements dynamically partitioned memory management. Process **B** is loaded into a partition whose base address is decimal 16380. The total size of the partition containing Process **B** is 4kB. Select the best answer:

    2 pts

    Answer: **c**
    a. When Process **B** is on the Ready Queue, the **Base Register** in the CPU contains the decimal value 16380.
    b. When Process **B** is waiting for an I/O to complete, the **Base Register** in the CPU contains the decimal value 16380.
    c. When Process **B** is running, the **Base Register** in the CPU contains the decimal value 16380.
    d. all of the above.
    e. more than one, but **not** all, of the above.
    f. none of the above.

2. For the same Process **B** described in the previous question, select **every correct** answer:

    3 pts

    Answer: **f**
    a. When Process **B** is on the Ready Queue, the **Limit Register** in the CPU contains the decimal value 20476.
    b. When Process **B** is on the Ready Queue, the **Limit Register** in the CPU contains the decimal value 4096.
    c. When Process **B** is waiting for an I/O to complete, the **Limit Register** in the CPU contains the decimal value 20476.
    d. When Process **B** is waiting for an I/O to complete, the **Limit Register** in the CPU contains the decimal value 4096.
    e. When Process **B** is running, the **Limit Register** in the CPU contains the decimal value 20476.
    f. When Process **B** is running, the **Limit Register** in the CPU contains the decimal value 4096.

3. During what stage(s) in the lifetime of a computer program may it be appropriate to resolve physical memory addresses, depending upon the Operating System?

    1 pt

    Answer: **e**
    a. Compile time
    b. Link time
    c. Load Time
    d. Run time
    e. all of the above
    f. more than one, but <u>**not**</u> all of the above
    g. none of the above

This work complies with the JMU Honor Code: _____
YourSignature

Please **print** your name **legibly:** _____

4. Indicate what command in *vim* will substitute all occurrences of the phrase "those truths" with the phrase "these truths" (as in "We hold these truths to be self-evident").

1 pt

Answers: **:1,$s/those truths/these truths/g** <u>or</u> **:%s/those truths/these truths//g**
 Explanation: **"1.$"** indicates the address range starting from the first line through the end of the Work buffer. **"%"** is a simpler way of specifying the same thing.
     's' specifies that the command is **s**ubstitute.
     '/' is the chosen delimiter (can be any character other than alphabetic, numeric, blank, or backslash), but must be the same in all three places)
     'g' specifies the **global** option, that is, that all occurrences of the search-string **"those truths"** should be replaced with **"these truths".**

5. The word "happy" appears twice in a document that you are editing under *vim.* The cursor is located somewhere between the two occurrences. Indicate what you have to do in *vim* to change only the second occurrence of "happy" to "glad".

3 pts

Answers:

1. Press **<<ESCAPE>>** to change to "Command" mode, if you were previously in "Input" mode. If you had already been in "command" mode, then you will hear a beep; in either case, you will wind up in "Command" mode.
2. Type **/happy** to locate the next occurrence of the string **"happy".**
3**a**. Type a colon (**:**) to change to "Last Line" mode, and then:
4**a**. Type **s/happy/glad/** to effect the desired change.
3**b**. Alternately, after step 2 type **i** to change to "Insert" mode, and then:
4**b**. manually move the cursor, delete the characters of "**happy**", and insert the characters of "**glad**".
PLEASE NOTE THAT THERE ARE SEVERAL ADDITIONAL WAYS TO ACCOMPLISH THE DESIRED GOAL. THE SOLUTIONS SHOWN HERE ARE MORE ELEGANT THAN MOST OF THE ALTERNATIVES, ALTHOUGH ANY THOROUGHLY-DESCRIBED SOLUTION THAT WORKS WILL EARN FULL CREDIT FOR THIS PROBLEM