### Quiz #2

#### General Questions, Multiple Choice

Timed: 22 minutes Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Final Mark: \_\_\_\_\_\_ / 22

| **Question**  **#** | **Best**  **Answer** | **Guessed?**  **(yes or no)** |
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Blue Mark Criteria AP (Red Mark) Criteria  
  
Correct: \_\_\_\_ / 11 Correct: \_\_\_\_ / 11  
  
Wrong: \_\_\_\_ / 11 Wrong: \_\_\_\_ / 11  
  
No Attempts: \_\_\_\_ / 11 No Attempts: \_\_\_\_ / 11  
  
Blue Mark = Correct - 0.25(Wrong) Red Mark = Correct - 0.25(Wrong)  
  
 = \_\_\_\_\_\_\_ - 0.25(\_\_\_\_\_) = \_\_\_\_\_\_\_ - 0.25(\_\_\_\_\_)   
  
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### Questions:

(Choose the best answer. 0.25 marks are deducted for mistakes)

1. +  
 / \  
 a \*  
 / \  
 b c  
  
 The tree above is traversed using a pre-order (DLR) traversal, and each  
 time a node is visited, the label for that node is printed. Which of  
 the following would be the resulting output?  
  
 (A) a + b \* c  
 (B) a b c \* +  
 (C) + a \* b c  
 (D) a \* + b c  
 (E) + \* a b c  
  
  
2. int Result (int m, int n) {  
 int j, Temp;  
   
 Temp = 1;  
 for(j=1; j<=n; j++)  
 Temp = Temp \* m;  
 return Temp;  
 }  
  
 Of the following, which best indicates the task performed by the function   
 above if only positive parameters are passed to the function?  
  
 (A) It approximates the mth root of n.  
 (B) It approximates the nth root of m.  
 (C) It computes the mth power of n.  
 (D) It computes the nth power of m.  
 (E) It computes the roots of a quadratic with positive coefficients  
 and with leading coefficient 1.  
  
  
3. A program uses a plotting board in the form of a Cartesian plane with the  
 center of the board at (0,0). A pen is suspended over the board and can be  
 controlled by the following instructions.  
  
 RP - Raise pen  
 LP - Lower pen  
 MP(x,y) - Move pen to point (x,y)  
  
 If the pen is up when MP(x,y) is executed, it will stay up; otherwise, it  
 will draw a line segment from its current position to (x,y). Which of the  
 following sequences of instructions will cause the capital letter T, and  
 nothing else, to be drawn?  
  
 (A) RP, MP(0,0), LP, MP(0,20), MP(-5,20), MP(5,20)  
 (B) RP, MP(0,0), MP(0,20), MP(-5,20), MP(5,20)  
 (C) RP, MP(0,0), LP, MP(0,20), RP, MP(-5,20), MP(5,20)  
 (D) RP, MP(0,0), LP, MP(0,20), RP, MP(-100,20), MP(100,20)  
 (E) RP, MP(0,0), LP, MP(-5,20), MP(5,20), MP(0,20), MP(0,0)  
  
  
4. int z(int k, int n) {  
   
 if (n == k)   
 return k;  
 else if (n > k)  
 return z(k,n-k);  
 else  
 return z(k-n,n);  
 }  
  
 Based on the function defined above, what is the value of x(6,8)?  
  
 (A) 1 (B) 2 (C) 3 (D) 4 (E) 8  
  
  
  
5. Suppose an input list consists of the numbers 1, 2, 3, 4, 5, 6 and  
 there are three operations that can be performed, using only one stack  
 S:  
 i. Copy next input to output list.  
 ii. Push next input onto S.  
 iii. Pop S and output the popped integer.  
  
 Which of the following is NOT a possible output list that could be   
 achieved using these operations?  
  
 (A) 1 2 3 4 5 6  
 (B) 6 5 4 3 2 1   
 (C) 2 4 6 5 3 1   
 (D) 3 4 5 6 1 2   
 (E) 1 2 5 6 4 3   
  
  
6 After the program segment  
  
 ofstream Outfile;  
  
 for(int i=1; i<= 3; i++) {  
 Outfile.open("out.txt");  
 Outfile << i\*i;  
 Outfile.close();  
 }  
  
 is executed, which of the following indicates the contents of 'out.txt'?  
  
 (A) 111 (C) 9 (E) 149  
 (B) 1 (D) 123  
  
  
7. Suppose List1 and List2 are pointers to the first nodes in each of two  
 linked lists, and q points to some node in the first list. The initial  
 segment of the first list, that is, all the nodes up to and including the  
 one pointed to by q, is to be removed and this segment put onto the begin-  
 ning of the second list which the order of the nodes in the initial segment  
 is maintained. If neither q nor List1 is NULL, then this task is correctly  
 performed by which of the following program segments, where p is a pointer?  
  
 I. q->Link = List2;  
 List2 = List1;  
 List1 = q->Link;  
  
 II. while (List1 != q->Link) {  
 p = List1;  
 List1 = List1->Link;  
 p->Link = List2;  
 List2 = p;  
 }  
  
 III. p = q->Link;  
 q->Link = List2;  
 List2 = List1;  
 List1 = p;  
  
 (A) None (C) I and III only (E) I, II and III  
 (B) III only (D) II and III only  
  
8. Suppose List is a variable of type Node\* that points to the first node of  
 a linear linked list of elements of type  
  
 struct Node {  
 int Datum;  
 Node\* Link;  
 };  
  
  
 Assume that the list is implemented without a header (dummy) node. If  
 the list is empty, which of the following conditions is both meaningful and  
 true?  
  
 (A) List == NULL  
 (B) List->Link == NULL  
 (C) List->Link == List  
 (D) List = 0  
 (E) Link == NULL  
  
  
  
9. Consider the following four tasks:  
 1. To perform a linear search of a list of n names  
 2. To perform a binary search of a sorted list of n names  
 3. To perform a selection sort into alphabetical order of a list of n  
 names that are initially in random order.  
 4. To perform a merge sort into alphabetical order of a list of n names  
 that are initially in random order  
  
 For large n, which of the following lists these tasks in order (from least  
 to greatest) of their worst-case running times?  
  
 (A) 2, 4, 3, 1 (C) 2, 4, 1, 3 (E) 2, 3, 1, 4  
 (B) 4, 3, 1, 2 (D) 2, 1, 4, 3   
  
  
10. Let x and y be variables of type double with only positive values. Of the  
 following, which best describes the conditions under which the boolean   
 expression, ( (x + y) == x), can have the value true?  
  
 (A) Only when y > x  
 (B) Only when y < 1  
 (C) Only when x is much greater than y  
 (D) Only when the computer has 32-bit words  
 (E) It can never have the value true.  
  
  
11. Customers using an automatic teller to withdraw money from the XYZ  
 National Bank must supply both their nonsecret account number and their  
 secret code number. The automatic teller is controlled by a computer  
 program, one of whose functions can "scramble" any number n to produce  
 a value s(n). The scrambling function s has the property that its   
 inverse t (i.e., that function t such that t(s(n)) == s(t(n)) == n  
 for all n) is very difficult to compute. Which of the following  
 information about the account number A and the code number C for each   
 customer should the automatic teller store in its data base (which is  
 not very secure) in order to provide the best protection against  
 unauthorized withdrawals?  
  
 (A) A, C (B) A, s(C) (C) A, s(t(C)) (D) s(A), C (E) t(A), C