COMP 202: Data Structures and Algorithms

Quiz #2 [**SOLUTION**] : 8th September 2014
(Stack and Queue)

YOUR NAME: _____
Duration : 20 minutes. Full marks = 15
Circle the best answer.

1. What is the most appropriate definition of Stack?
   A. stack is a First In First Out data structure.
   B. stack is an Abstract Data Type with push and pop operations. ✔
   C. stack is container of elements of different data types.
   D. none of the above

2. Which of the following statements defines Queue more correctly?
   A. queue is an abstract data type with push and pop operations.
   B. queue is a container with only one end open.
   C. queue is an ordered collection of items with First-In First-Out structure. ✔
   D. none of the above

3. The operation of inserting an element in queue from rear is called ___.
   A. push B. dequeue C. enqueue ✔ D. dump

4. The operation of extracting an element from stack is called ___.
   A. extract B. remove C. dequeue D. pop ✔

5. One difference between a queue and a stack is:
   A. Queues require dynamic memory, but stacks do not.
   B. Stacks require dynamic memory, but queues do not.
   C. Queues use two ends of the structure; stacks use only one. ✔
   D. Stacks use two ends of the structure, queues use only one.

6. Underflow is a condition where you ___.
   A. insert a new item when there is is no space
   B. delete a non-existent item from the list
   C. delete an item from empty list ✔
   D. none of the above

7. peek opentation in stack ___.

A. is similar to pop operation

B. is not a valid funtion

C. sums up all the items and print the value

D. prints the top item without deleting it from list ✔

8. In a priority queue, ___.

A. remove operation is same as that of queue

B. insert operation is same as that of queue ✔

C. remove and insert operations are different than that of queue

D. peek operation is same as that of queue

9. The best data structure to check whether an arithmetic expression has balanced parentheses is a ___.

A. stack ✔ B. queue C. array D. structure

10. Here is an infix expression: $964-+942-*+$. Suppose that we are using the usual stack algorithm to calculate the given postfix expression. What is the maximum number of symbols that will appear on the stack AT ONE TIME during the calculation?

A. 2 B. 3 C. 4 ✔ D. 5

11. Convert the following infix expression into postfix expression.
$((A+B)*C-(D-E))\$(F+G)$ where \$ is read is raised to the power. eg. 3\$2 is 9.

A. $ABC*+DE-FG+-\$$

B. $ABC*+DE--FG+\$$

C. $AB+C*DE--FG+\$$ ✔

D. none of the above

12. The initial configuration of a queue is a, b, c, d ('a' is in the front end). To get the configuration d, c, b, a one needs a minimum of

A. 2 deletions and 3 insertions

B. 3 deletions and 2 insertions

C. 3 deletions and 3 insertions ✔

D. 3 deletions and 4 insertions

13. If the sequence of operations - $push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop$, are performed on a stack, the sequence of popped out values are

A. $2, 2, 1, 1, 2$ ✔ B. $2, 2, 1, 2, 2$ C. $2, 1, 2, 2, 1$ D. $2, 1, 2, 2, 2$

14. Stack A has the entries a, b, c (with a on top). Stack B is empty. An item popped out of stack A can be either printed immediately or pushed to stack B. An item popped out of stack B can only be printed. In this arrangement, which of the following permutations of a, b, c is not possible?

A. b, a, c B. b, c, a C. c, a, b ✔ D. a, b, c

15. Convert the following postfix expression into prefix expression.
$AB + CD * -$

A. $+AB - *CD$ B. $- + AB * CD$ ✔ C. $- * +ABCD$ D. $+ * -ABCD$

16. In your opinion, what is the degree of difficulty level of this quiz?
1 being the easiest and 10 being the most difficult one.

1 2 3 4 5 6 7 8 9 10

*** THE END ***