Ch 5_Quiz

84

Multiple Choice Questions (10%)

(D) 1. Which of the following is not a means of repeating a block of instructions?

    A. Pretest loop   B. Posttest loop   C. Recursion   D. Assignment statement

(D) 2. The insertion sort algorithm is an example of an algorithm in which of the following classes?

    A. $\Theta(\log_2 n)$ B. $\Theta(n)$ C. $\Theta(n \log_2 n)$ D. $\Theta(n^2)$

(A) 3. The binary search algorithm is an example of an algorithm in which of the following classes?

    A. $\Theta(\log_2 n)$ B. $\Theta(n)$ C. $\Theta(n \log_2 n)$ D. $\Theta(n^2)$

(C) 4. Preconditions, postconditions, and loop invariants are examples of which of the following?

    A. Pseudocode B. Iterative structures C. Assertions D. Recursion

(D) 5. Which of the following is a loop invariant at the point at which the test for termination is performed in the following loop structure?

```
X = 3
while  X < 5 :
    X = X + 2
```

A. X > 5   B. X < 5   C. X ≥ 5   D. X ≤ 5

→ 在迴圈跳出之前，必定成立的要件

→ 可能+完 =5，且还没 Jump！

Fill-in-the-blank/Short-answer Questions (90%)

1. What sequence of values will be printed when the following instructions are executed? (8%)

```
X = 5
if  X < 7 :
    print 6
    Y = 6
else:
    print 4
    Y = 4
if  Y < 5 :
    print 3
else:
    print (2)
```

6.2

Ans: 6
2

2. What sequence of values will be printed when the following instructions are executed? (8%)

```
X = 5
while (X < 7):
    print (X)
    X = X + 1
print (X)
while (X > 2):
    print (X)
    X = X - 2
```

Ans: 5
6
7
7
5
3

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3. At most, how many entries in a list of 5000 names will be interrogated when using binary search algorithm? (8%)

$2^k = 5000$, $2^{10}=1024, 2^{11}=2048, 2^{12}=4096, 2^{13}>8192$ $2^k \geq 5000$ 13 # ^{12} 4096

Ans:13

4. At most, how many entries in a list of 5000 names will be interrogated when using sequential search algorithm? (8%)

5000 #   Ans: 5000

5. Which of the sequential or binary search algorithms would find the name Kelly in the list more quickly? (8%)

    John, Kelly, Lewis, Maurice, Nathan, Oliver, Pat, Quincy, Roger, Stan, Tom

Ans: Sequential #   Ans: Sequential

6. Suppose the binary search algorithm was being used to search for the entry Tom in the list

    Nathan, Oliver, Pat, Quincy, Rodger, Stan, Tom

A. What would be the first entry in the list to be considered?   Quincy (5%) Quincy

B. What would be the second entry in the list to be considered?   Stan (5%) Stan