

No.: \_\_\_\_\_

Name: \_\_\_\_\_

**Computer Science  
Homework for Chapter 5**

**Due: 2010/05/05**

\_\_\_\_\_ 1. The insertion sort algorithm is an example of an algorithm in which of the following classes?

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

\_\_\_\_\_ 2. The binary search algorithm is an example of an algorithm in which of the following classes?

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

\_\_\_\_\_ 3. 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

\_\_\_\_\_ 4. Preconditions, postconditions, and loop invariants are examples of which of the following?

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

\_\_\_\_\_ 5. Which of the following does not print the same sequence of numbers as the others?

- |   |  |  |
|---|--|--|
| A. $X \leftarrow 5$<br>while ( $X < 6$ ) do<br>(print the value of X;<br>$X \leftarrow X + 1$ ) | B. $X \leftarrow 4$<br>while ( $X < 5$ ) do<br>( $X \leftarrow X + 1$ ;<br>print the value of X) | C. $X \leftarrow 5$<br>repeat<br>(print the value of X;<br>$X \leftarrow X + 1$ )<br>until ( $X > 6$ ) |
|---|--|--|

\_\_\_\_\_ 6. What sequence of values would be printed if the procedure xxx described below were executed with the value of N being 9?

```
procedure xxx (N)
if (N < 4) then (print the value of N;
                apply the procedure yyy to the value 7)
else (apply the procedure yyy to the value 2;
      print the value of N)
```

```
procedure yyy (N)
if (N < 5) then (print the value of N;
                apply the procedure zzz to the value 6)
else (apply the procedure zzz to the value 5)
```

```
procedure zzz (N)
if (N = 5) then (print the value 7)
else (print the value 8)
```

- A. 2,7,8    B. 2,8,9    C. 1,7,8    D. 3,7,9

\_\_\_\_\_ 7. What sequence of numbers would be printed if the following procedure were executed with the value of N being 0?

```
procedure xxx (N)
print the value of N;
if (N < 2) then (apply the procedure xxx to the value N + 1)
                else (print the value of N)
print the value of N
```

- A. 0,1,2,1,0    B. 0,1,1,0    C. 0, 1, 2, 2, 2, 1, 0    D. 0,1,3,3,1,0

8. In the following table, connect the term to each phrase that gives the best description of the term. (30%)

<b>Term</b>		<b>Descriptive Phrase</b>
stepwise refinement	_____	<b>A.</b> The fundamental concept in computer science
proof of correctness	_____	<b>B.</b> A means of saving the result of a computation for future use
loop invariant	_____	<b>C.</b> A means of producing different actions depending on a condition
recursion	_____	<b>D.</b> A divide and conquer approach to problem solving
pretest loop	_____	<b>E.</b> A statement that is true each time a specific point in a repetitive process is reached
procedure	_____	<b>F.</b> A program segment isolated as a unit
assignment statement	_____	<b>G.</b> The technique of applying a program segment within itself
if-then-else statement	_____	<b>H.</b> Looks before it leaps
sequential search	_____	<b>I.</b> A formal means of verifying software
algorithm	_____	<b>J.</b> Less efficient than the binary method