Final Exam

Review of attempt 1

Finish review

Started on	Wednesday, 1 June 2011, 10:28 AM
Completed on	Wednesday, 1 June 2011, 11:17 AM
Time taken	48 mins 29 secs
Marks	34/48
Grade	**7.1** out of a maximum of 10 (**71**%)

1

Marks: 3

```
//THIS CODE IS SELECTION SORT
//PLEASE FILL THE BLANKS WITH THE CORRECT ANSWER
void selection_sort(float x[ ], int N)
{
____int target_index, large_index, i;
____float large;

____//Update the data at each target position one by one, from right to left
____for (target_index =N-1; target_index >0; target_index --)
____{
____large = x[ 0 ];//<--TODO
____large_index = 0;

____for (i=1; i <= target_index; i++)
____if (x[i] > large)
____{
_________large = x[ i ]; //<--TODO
_________large_index = i ; /* and its position number into large_index */
____}

____ x[ large_index ] = x[ target_index ]; /* swap */
____ x[target_index] = large;
____}
}
```

Correct

Marks for this submission: 3/3.

2

Marks: 1

What is true about stack?

Choose one answer.

- a. It is Last In First Out ✗
- b. Stack is a variation of List. ✓
- c. All of the above ✗
- d. It is First In Last Out ✗

Incorrect

Marks for this submission: 0/1.

3

Marks: 1

What is the complexity O of the following code:

```
---------------------------------------------------------------------
for (i = 0; i < N; i++)
for (j = 0; j < N * N; j++)
sum++;
---------------------------------------------------------------------
```

Choose one answer.

- a. N^2 ✗
- b. 1 ✗
- c. N ✗

d. N^3 ✓

Incorrect
Marks for this submission: 0/1.

4

Marks: 1

Generally in Bubble sort algorithm, how many time of sorting (pass) do we need to obtain the sorted array?

Choose one answer.

- a. n/2 ✗
- b. n-1 ✓
- c. O(n^2) ✗
- d. 2n ✗

Incorrect
Marks for this submission: 0/1.

5

Marks: 3

//THIS IS STRAIT INSERTION SORT
//PLEASE FILL IN THE BLANKS WITH THE CORRECT ANSWERS
0.Insertion-Sort(A)
1.____ for j = 1 to n-1 {
2._____ key = A[j];
3._____ i = j-1;
4._____ while i >= 0 and A[i] > key
5._____ { A[i+1] = A[i];
6._____ i = i – 1;
7.____ }
8.____ A[i+1] = key ;
9.}

Correct
Marks for this submission: 3/3.

6

Marks: 1

In a Singly linked list that has only one node, if a Nodes (data, pointer) is a head, the pointer points to _____.

Choose one answer.

- a. head ✗
- b. somewhere in the memory. ✗
- c. null ✓
- d. tail ✗

Correct
Marks for this submission: 1/1.

7

Marks: 1

What is true about array-based list and reference-based list?

Choose one answer.

- a. reference-based list can not perform insertion and deletion ✗
- b. array-based list is not as flexible in size as reference-based list ✓
- c. array-based list is more flexible in size than reference-based list ✗

Correct
Marks for this submission: 1/1.

8

Marks: 1

In order to calculate the complexity of an algorithm, there are some steps that you should know. Please select the correct order of the step to calculate the complexity.

A. Perform the mathematical analysis to find the relationship between T and n
B. Simplify the result of complexity
C. Derive the mathematical formula of T from the code (or pseudo-code)

Choose one answer.

- a. C A B ✓
- b. B A C ✗
- c. A C B ✗

Incorrect
Marks for this submission: 0/1.

9

Marks: 1

Given that d is O(f), e is O(g).
What is the complexity of d * e?

Choose one answer.

- a. O(f + g) ✗
- b. None of the about ✗
- c. O(f*g) ✓

Incorrect
Marks for this submission: 0/1.

10

Marks: 1

This is an Array Representation of a Complete Binary Tree:

A	G	L	D	E	F	Z	H	I	P

What is the left child of G:

Choose one answer.

- a. E ✗
- b. Z ✗
- c. D ✓
- d. H ✗

Correct
Marks for this submission: 1/1.

11

Marks: 1

Given 2 result of a binary tree traversal:
preorder : YZCDEXBUTA
inorder : DCEZYUBTXA
What is the root node of the tree?

Choose one answer.

- a. B ✗
- b. X ✗
- c. Y ✓
- d. A ✗

Correct
Marks for this submission: 1/1.

12

Marks: 1

What is the result of this code below:

```
----------------------------------------
for (int i=1; i<5; i++)
{
for (int j = 1; j < i-5; j++)
{
System.out.print("*");
}
System.out.println();
}
}
```

Choose one answer.

- a. nothing ✓
- b. //result:
  ***
  **
  * ✗
- c. //result:
  *
  **
  *** ✗

Correct
Marks for this submission: 1/1.

13

Marks: 1

What is maximum number of nodes in a binary tree of depth 5?

Choose one answer.

- a. 15 ✗

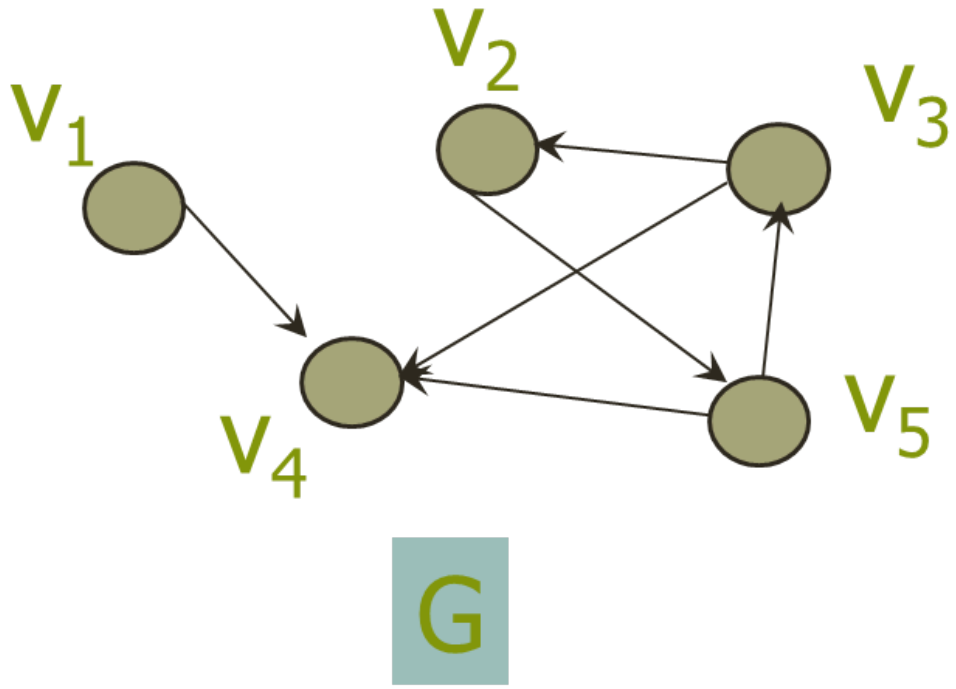
b. 63 ✓

c. 30 ✗

Correct
Marks for this submission: 1/1.

14

Marks: 3



Please fill the table of adjacency matrix for nod V4 and V5 of the graph:

	v1	v2	v3	v4	v5
v1	x	x	x	x	x
v2	x	x	x	x	x
v3	x	x	x	x	x
v4	0	0	0	0	0
v5	0	0	1	1	0

Correct
Marks for this submission: 3/3.

15

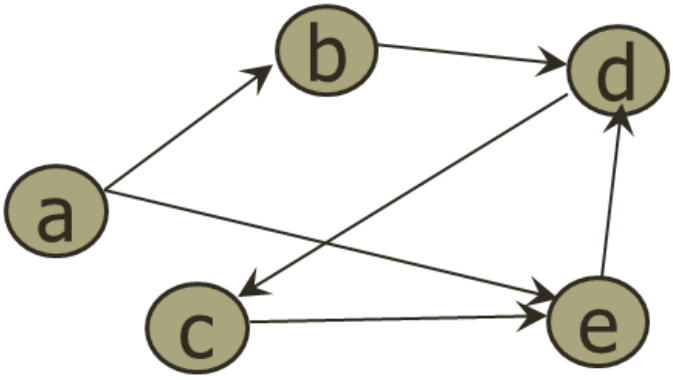
Marks: 3

```
//Program to create Binary tree, with left and right child
//=======================================
NodePtr maketree(int value) //create a new.
{ NodePtr p;
p= (NodePtr)malloc(sizeof(struct node));
p->info = value;
p->right = NULL;
p->left = NULL;
return(p);
}


void setleft(NodePtr p, int value) //create a new left child
{ if (p==NULL)
printf("void insertion\n");
else if (p->left != NULL)
printf("invalid insertion");
else
p->left = maketree(value);
}

void setright(NodePtr p, int value) //create a new right child
{ if (p==NULL)
printf("void insertion\n");
else if (p->right != NULL)
printf("invalid insertion");
else
p->right = maketree(value);
}
```

Correct
Marks for this submission: 3/3.

16

Marks: 1



CAN THIS GRAPH PERFORM TOPOLOGICAL SORT?

Choose one answer.

- a. YES ✗
- b. NO ✓

Incorrect
Marks for this submission: 0/1.

17

Marks: 1

Calculate the result of Postfix expression:
6 2 - 3 1 - 4 / 2 + *

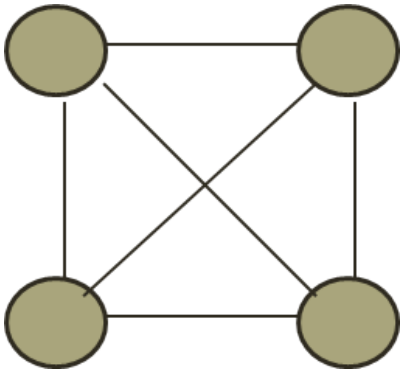
Choose one answer.

- a. 30 ✗
- b. 10 ✓
- c. 7 ✗
- d. 5 ✗

Correct
Marks for this submission: 1/1.

18

Marks: 1



WHICH IS THE BEST DESCRIBE OF THE GRAPH?

Choose one answer.

- a. Unweighted, Undirected, Complete Graph ✓
- b. Unweighted, undirected, connected graph ✗
- c. Complete Graph ✗
- d. Unweighted, connected graph ✗

Incorrect
Marks for this submission: 0/1.

19

Marks: 1

What implementation type of the queue from the code?

```
---------------------------------------------------
1. #define TOTAL_SLOTS 100
2. typedef struct queue Queue;
3. struct queue
4. { int front;
5. int rear;
6. int items[TOTAL_SLOTS];
```

7. };

Choose one answer.
- a. J-based implemenation ✗
- b. Dont know ✗
- c. Linked Implemenation ✗
- d. array based implementation ✓

Correct
Marks for this submission: 1/1.

20
Marks: 1

```
void bubblesort_checkpasses(int x[ ], int N)
{
int temp, i,j;
boolean switched = TRUE;
{...}
}
```

WITH THE INTRODUCTION OF A BOOLEAN VARIABLE switched , WHAT IS THE BEST CASE TIME COMPLEXITY OF THE CODE?

Choose one answer.
- a. O(log) ✗
- b. O(n^2) ✗
- c. O ✓
- d. O(1) ✗

Incorrect
Marks for this submission: 0/1.

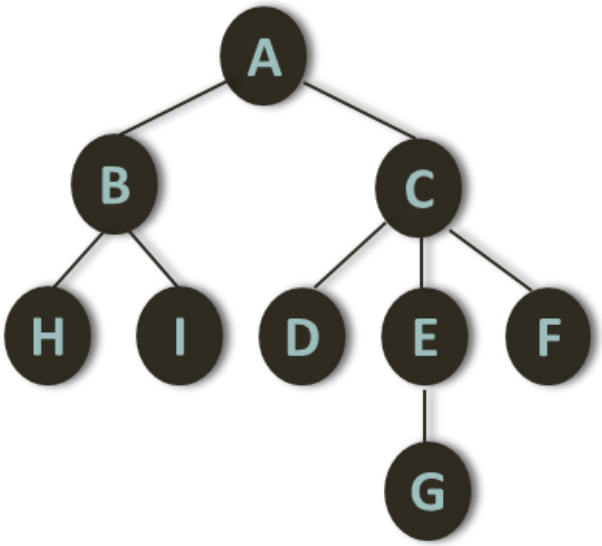
21
Marks: 1

What is number of nodes in a full binary tree of depth 4?

Choose one answer.
- a. 32 ✗
- b. 10 ✗
- c. 17 ✗
- d. 31 ✓

Correct
Marks for this submission: 1/1.

22
Marks: 1



In the picture, the degree of node C is:

Choose one answer.
- a. 3 ✓
- b. 4 ✗
- c. 7 ✗
- d. 2 ✗

Correct
Marks for this submission: 1/1.

23

Marks: 1

Calculate the result of Postfix expression:
6 2 - 3 1 - 4 * 2 + *

Choose one answer.

- a. 20 ✗
- b. 23 ✗
- c. 17 ✗
- d. 40 ✓

Correct
Marks for this submission: 1/1.

24

Marks: 1

```
//LOOK AT THE GRAPH OPERATION BELOW
//WHAT DOES IT DO?
unmark all vertices in G;
Creat a queue q;
mark s;
insert(s,q)
while (!isempty(q))
__curr = delete(q);
__visit curr; // e.g., print its data
__ for each edge
__ __ if V is unmarked
_______mark V;
_____ insert(V,q);
```

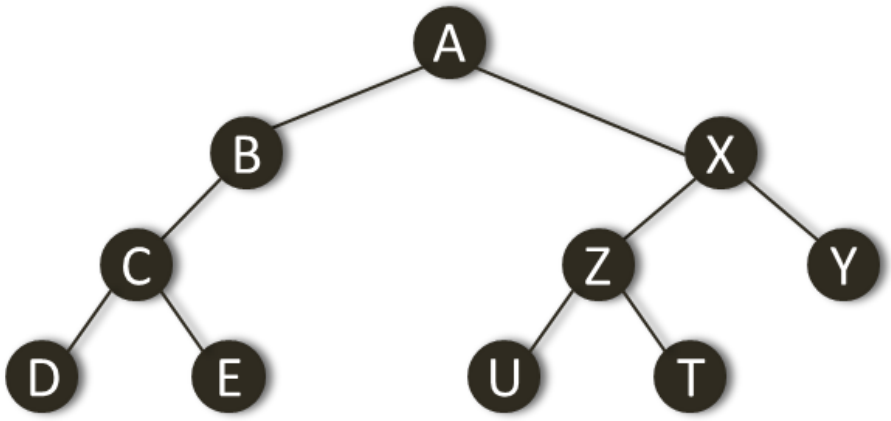
Choose one answer.

- a. breadth first search ✓
- b. post order graph traversal ✗
- c. in order graph traversal ✗
- d. depth first search ✗

Incorrect
Marks for this submission: 0/1.

25

Marks: 3



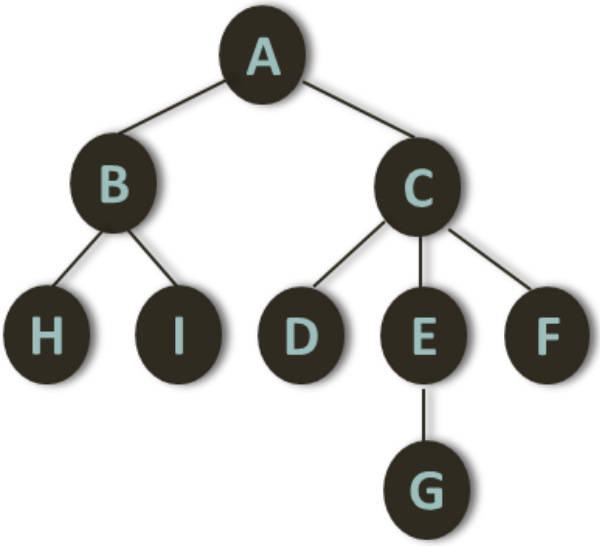
What is the result of inorder tree traversal? Fill the blanks with correct letter order:

d	c	e	b	a	u	z	t	x	y

Correct
Marks for this submission: 3/3.

26

Marks: 1



In the picture, the degree of node E is:

Choose one answer.
- a. 1 ✓
- b. 4 ✗
- c. 5 ✗
- d. 2 ✗

Correct
Marks for this submission: 1/1.

27
Marks: 1

This is an Array Representation of a Complete Binary Tree:

A	G	L	D	E	F	Z	H	I	P

What is the right child of D:

Choose one answer.
- a. I ✓
- b. P ✗
- c. L ✗

Incorrect
Marks for this submission: 0/1.

28
Marks: 1

In ADT definition of FIFO queue, what operation can not be ignored?

Choose one answer.
- a. IsFull() ✗
- b. Size() ✗
- c. All of the above ✗
- d. Insert() ✓

Incorrect
Marks for this submission: 0/1.

29
Marks: 1

In DSA, the quicksort is _____ .

Choose one answer.
- a. none of the above ✗
- b. an algorithm ✓
- c. a data structure of array ✗

Correct
Marks for this submission: 1/1.

30
Marks: 1

WHICH PREQUISITE IS NEEDED BY DIJKSTRA ALGORITHM?

Choose one answer.
- a. Non cycles ✗
- b. No vertex with more than 4 edges ✗
- c. Non-negative edge weights ✓
- d. Both of the above ✗

Correct
Marks for this submission: 1/1.

31
Marks: 1

What is the condition of this queue to be empty?

```
1. #define TOTAL_SLOTS 100
2. typedef struct queue Queue;
3. struct queue
4. { int front;
5. int rear;
6. int items[TOTAL_SLOTS];
7. };
```

Choose one answer.
- a. front = 0; ✗
- b. front == rear; ✓
- c. rear = 0; ✗
- d. rear = null ✗

Correct
Marks for this submission: 1/1.

32
Marks: 1

What is the time complexity of Selection sort?

Choose one answer.
- a. O(n^2) ✓
- b. O(1) ✗
- c. O(n/2 +n) ✗
- d. O ✗

Correct
Marks for this submission: 1/1.

33
Marks: 1

Calculate the result of Prefix expression:
+ 10 * 5 + 2 3

Choose one answer.
- a. 31 ✗
- b. 75 ✗
- c. 55 ✗
- d. 35 ✓

Correct
Marks for this submission: 1/1.

34
Marks: 1

Pseudo code:
Use a pointer p to traverse the list and search the node and compare the data.
If found: return the pointer to the node.
Otherwise return NULL. Node(data, next)

```
1. NodePtr SearchNode(NodePtr pList, int data)
2. { NodePtr p=pList;
3. while (p!=NULL)
4. { if (p->data== _____) //(A)
5. return p;
6. p = _____; //(B)
7. }
8. return NULL;
9.}
```

Choose one answer.
- a. (A) 0
  (B) head ✗

b. (A) data
(B) p->data ✗

c. (A) data
(B) p->next ✓

Correct
Marks for this submission: 1/1.

35
Marks: 1

What do you think about the statement below?
In DSA, Tree, Stack, Queue are algorithms to solving common data problem!

Answer:
True ✗
False ✓

Incorrect
Marks for this submission: 0/1.

36
Marks: 1

Max heap is the an array of integer that satisfy:

Choose one answer.
a. Child >= parent
Root is the smallest ✗
b. Child <= parent
Root is the largest ✗
c. Child => parent
Root is the largest ✗

Incorrect
Marks for this submission: 0/1.

37
Marks: 1

What is the time complexity of Straight Insertion Sort in best case?

Choose one answer.
a. O(n^2) ✗
b. O ✓
c. 1 ✗
d. O(n^3) ✗

Incorrect
Marks for this submission: 0/1.

38
Marks: 1

In a Circular linked liste, if a Nodes (data, pointer) is a tail, the pointer points to _____.

Choose one answer.
a. tail ✗
b. somewhere in the memory ✗
c. head ✓
d. null ✗

Correct
Marks for this submission: 1/1.

Finish review