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Department of Computer Engineering
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COM 2005 Data Structures
Final Exam, 01.11.2019, 10:00, D-1
Duration : 61 Minutes

NUMBER : ..... NAME : ..... SIGNATURE :	EVALUATION	
	[.....]	.....

Exam Execution Instructions of Faculty of Enginnering should be obeyed. Questions are related to 1,4,12 of Program Learning Outcomes

```
void insertOrdered(DoublyNode* newNode,
                   DoublyNode* current)
{
  if(.....)
  {
       newNode->next        = current;
       newNode->prev        = current->prev;
       current->prev->next  = newNode;
       current->prev        = newNode;
  }
  else
    insertOrdered(newNode, current->next);
}

int main()
{
  DoublyLinkedList list; DoublyNode* newNode;

  newNode = new DoublyNode;
  newNode->elem  = "Paul";  newNode->score = 720;
  list.insertOrdered(newNode, list.header->next);

  newNode = new DoublyNode;
  newNode->elem = "Rose";   newNode->score = 590;
  list.insertOrdered(newNode, list.header->next);

  newNode = new DoublyNode;
  newNode->elem = "Anna";   newNode->score = 660;
  list.insertOrdered(newNode, list.header->next);

  newNode = new DoublyNode;
  newNode->elem = "Mike";   newNode->score =1105;
  list.insertOrdered(newNode, list.header->next);
}
```

1. Complete the function **insertOrdered()**. **(25P)**
Assume that **Header**'s and **Trailer**'s scores are **0**.

*You'll loose **5P** from wrong answer.*

(A)
```
if ((current == trailer)
|| (newNode->score <= current->score))
```

(B)
```
if ((current->next == trailer)
|| (newNode->score <= current->score))
```

(C)
```
if ((current == trailer)
|| (newNode->score <= current->next->score))
```

(D)
```
if ((current->next == trailer)
|| (newNode->score <= current->next->score))
```

8 4 12 2 6 10 14 1 3 5 7 9 11 13 15

2. Assume that the numbers above are inserted into a binary tree. Assume again that another 3 new binary trees are generated by the output of the `inorder`, `preorder` and `postorder` traversals of this binary tree. Which of the following is the ascending of the *levels* of these 3 new binary trees? **(25P)**

*You'll loose **5P** from wrong answer.*

(A) **inorder < preorder < postorder**

(B) **inorder < postorder < preorder**

(C) **preorder < inorder < postorder**

(D) **preorder < postorder < inorder**

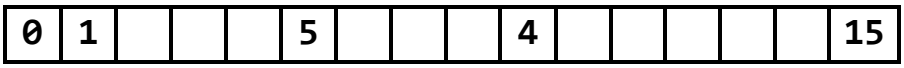
(E) **postorder < inorder < preorder**

(F) **postorder < preorder < inorder**

8 4 12 2 6 10 14 1 3 5 7 9 11 13 15

3. Assuming that the numbers above are inserted into a Heap :

a) What is the output of the **print()**? **(25P)**



b) What is the output of the **print()** after **removeMin()** ? **(25P)**