



NUMBER : NAME :	SIGNATURE :	EVALUATION				
		1[...]	2[...]	3[...]	4[...]	5[...]

Exam Execution Instructions of Faculty of Engineering should be obeyed. Questions are related to 1,4,12 of [Program Learning Outcomes](#)

```
void insertOrdered(DoublyNode* newNode,
                  DoublyNode* current)
{
    // CODE BLOCK I
    if ((current == trailer) ||
        (newNode->score <= current->score))
    {
        newNode->next = current;
        newNode->prev = current->prev;
        current->prev->next = newNode;
        current->prev = newNode;
    }
    else
        insertOrdered(newNode, current->next);

    // CODE BLOCK II
    if ((current->next == trailer) ||
        (newNode->score <= current->next->score))
    {
        newNode->next = current->next;
        newNode->prev = current;
        current->next->prev = newNode;
        current->next = newNode;
    }
    else
        insertOrdered(newNode, current->next);

    // CODE BLOCK III
    if((newNode->score >= current->next->score) &&
        (current->next != trailer))
        insertOrdered(newNode, current->next);
    else
    {
        newNode->next = current->next;
        newNode->prev = current;
        current->next->prev = newNode;
        current->next = newNode;
    }

    // CODE BLOCK IV
    if ((newNode->score >= current->score) &&
        (current != trailer))
        insertOrdered(newNode, current->next);
    else
    {
        newNode->next = current;
        newNode->prev = current->prev;
        current->prev->next = newNode;
        current->prev = newNode;
    }
}

int main()
{
    DoublyLinkedList list; DoublyNode* newNode;
    newNode = new DoublyNode;
    newNode->elem = "Paul";
    newNode->score = 720;
    list.insertOrdered(newNode, list.header);
}
```

1. Which code blocks insert Paul without any recursive call? (25P)

Assume that Header's and Trailer's scores are 0.
You'll loose 5P from wrong answer.

- (A) I, II
- (B) I, III
- (C) II, III
- (D) II, IV
- (E) III, IV

2. Considering **Code Block II**, how many times does the insertOrdered() function call itself recursively when adding nodes that have scores 720, 590, 660 and 1105 respectively? (25P)

Assume that Header's and Trailer's scores are 0.



```
int binarySum(int A[], int i, int n)
{
    if (n == 1)
        return A[i];
    else
    {
        int Sum = binarySum(A, i, n / 2) +
                  binarySum(A, i + n / 2, n / 2);
        cout << Sum << " ";
        return Sum;
    }
}

int main()
{
    int A[8] = {2,4,6,8,10,12,14,16};
    int binSum = binarySum(A, 0, 8);
}
```

3. What is the output of the program above? (25P)

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4. How many times does the `binarySum()` function call itself recursively? (25P)

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