

Course Title: Data Structures & Algorithms Analysis
Date: 12 / 03 / 2018
No. of Questions: 2 Questions
Time: 1 hour
Using Calculator (No)

University of Palestine



Midterm Exam
2nd semester 2017/2018
Total Grade: 15

Instructor Name: Eng. Eman Alajrami
Student No.: _____
Student Name: _____
College Name: IT
Dep. / Specialist: _____
Using Dictionary (No)

First Question

No. of Branches (4)

(9 marks)

1. Arrange the Big O notation from the worst to the best?(1 marks)

nLog n N² 2ⁿ N

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2. Give the Big O-notation for the time used by the code segment shown below: Show how did you get your answer: (4 marks)

a. (2 marks)

```
for (i = 1; i < 5; i++)  
for (j = 1; j < 10; j++)  
x = x*2 ;
```

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b. (2 marks)

```
void silly(int n, int x, int y)  
{  
for (int i = 0; i < n; ++i)  
{  
if (x < y)  
for (int k = 0; k < n * n; ++k)  
{  
System.out.println("k = " + k);  
}  
else System.out.println("i = " + i);  
}  
}
```

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3. What the following code segment will print?(1 marks)

```
IntStack s = new IntStack( );  
s.push(1);  
s.push(2);  
s.push(3);  
System.out.println(s.pop( ));
```

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4. What is the Big O of the following method? What is the output if we call it with n = 10? (3 marks)

```
void silly(int n)  
{  
    if (n <= 0)  
        return ;  
    System.out.println("n = " + n);  
    silly(n/2);  
}
```

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Second Question	No. of Branches (3)	(6 marks)
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1. Write the pseudo code for the insertion sort (detailed one)(2 marks)

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2. Write a recursive method that print integer numbers from n to 1. (2 marks)

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3. Write the method push of the stack. (2 marks)

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قال الإمام الشافعي:

بقدر الكد تكسب المعالي***ومن طلب العلا سهر الليالي
ومن طلب العلى بغير كد***أضاع العمر في طلب المحال

Good Luck