

Graded ICA024

Big-Oh Ex09

CS 244

Graded In-Class Activity: BigOhEx09

```
main()  
{  
    int tot = 0;  
    for ( i=0; i < n; i++ )  
    {  
        int subtotal = 0;  
        for( k=0; k < i; k++)  
            subtotal += k;  
        tot += subtotal;  
    }  
}
```

Operations

1

n

n

$1 + 2 + 3 + \dots + (n-1)$

$1 + 2 + 3 + \dots + (n-1)$

n

Create a MS-Word document, named BigOhEx09.docx. Copy the above code and operations table into it. Complete the exercise by including the corresponding Sigma Summation, its simplification, and the final Big-Oh runtime for this code.

Submit the document to the appropriate D2L dropbox, before class ends

Solution: Coding example #9

```
main()  
{  
    int tot = 0;  
    for ( i=0; i < n; i++ )  
    {  
        int subtotal = 0;  
        for( k=0; k < i; k++)  
            subtotal += k;  
        tot += subtotal;  
    }  
}
```

$$\sum_{i=1}^{n-1} i = \frac{(n-1)n}{2} = n^2$$

Operations

1

n

n

$1 + 2 + 3 + \dots + (n-1)$

$1 + 2 + 3 + \dots + (n-1)$

n

Answer: **$O(n^2)$**