Worksheet 14 Solution

March 25, 2020

Question 1

a. **Inner Loop:** n
   Outer Loop: $n - 5$
   Theta Expressions: $\Theta(n^2)$

b. **Inner Loop:** $\dfrac{n}{3} + (n - 2)$
   Outer Loop: $n - 4$
   Theta Expressions: $\Theta(n^2)$

c. **Inner Loop #2:** $\displaystyle\sum_{i=1}^{n} i = \dfrac{n(n+1)}{2}$

   Inner Loop #1: $n \cdot \dfrac{n(n+1)}{2} = \dfrac{n^3 + n^2}{2}$

   Outer Loop: $\dfrac{n^3 + n^2}{2} \cdot (n - 4) = \dfrac{n^4 - 3n^3 + 4n^2}{2}$

   Theta Expressions: $\Theta(n^4)$

Question 2