**University of Indianapolis**

**R.B. Annis School of Engineering**

**CSCI-340:  Computer Algorithms (4 Credit Hours)**

**HW 1: 100 points**

**Objective:** The objective of this homework is to:

1. Practice algorithm analysis techniques
2. Develop knowledge regarding different techniques to find the efficiency/run time of recursive algorithms

**Task 1:**   Solve the following recurrence relations using the iteration technique:

𝑇(𝑛)=𝑇(𝑛−1) + 𝑛, 𝑇(1)=1

**Task 2:**   Solve the following recurrence relations using recursion tree:

**Task 3:**   Solve the following recurrence relations using master theorem:

1. 𝑇(𝑛)= 4𝑇(𝑛/2) + 𝑛2
2. 𝑇(𝑛)= 𝑇(𝑛/2) + 𝑛2
3. 𝑇(𝑛)= √2 T(𝑛/2) + log𝑛

**HW Grading Rubric:**

1. **Task 1** – 30 marks

1. **Task 2** - 40 marks
2. **Task 3** - 30 marks (3\*10)