**Zachary Vance**

**CS 421 HW1 (30 pts due on August 30 by 11:59 pm)**

1. **Type your answer clearly using appropriate tool**
2. **If you need to write by hand, make sure that it is clearly readable**
3. **You need to have ONLY one file to submit. Your file MUST have your name on it**
4. **Name of the file must be in the form of LASTFISTNAMEHW#. For example, I was a student and submitting HW1 solution, then file name of my HW1 would be AticiMustafaHW1**
5. **You must show all your work clearly for full credit.**
6. **If any of the above condition is not satisfied, you will lose %20 of your grade.**

**HW1 is review of CS 339**

1. **(10 pts) The following code segment is given:**

***sum=0;***

***for(i=1;i<=1000;i++)***

***for(j=1;j<=i;j++)***

***sum=sum+1***

1. **Give mathematical summation equivalent to the above loop**
2. **Determine the sum value formulated in part (a)**
3. **(10 pts) The following loop is given**

***sum=0;***

***for(i=2;i<=1000;i++)***

***sum=sum+pow(3,i) //Note that function pow(3,i) returns***

***print(sum)***

**a-Give mathematical summation equivalent to the above loop**

**b-Determine the sum value formulated in part (a)**

**Note: your answer should be given as power of 3 not a number.**

1. (10 pts) Prove the following statement is true for any integer n>0 using mathematical induction.

P(n)=

Base: n = 1, 2(1) – 1 = 1 is true.

Induction Step: Assume P(k) is true for some k >= 1. That is

Need to show: P(k+1) is also true.

P(k+1) =

=

=

=

=

By mathematical induction, this statement is true for any integer n>0 using mathematical induction.