AP Computer Science Name: _____

Unit 3 Practice Assignment

Instructions: Write Java programs (in Blue J) to accomplish the following four objectives. Make sure you read each question carefully and understand exactly what the question is asking!

1. The first four lines in the lyrics of the 2016 hit song "PPAP" by artist Kosaka Daimaou are as follows:

   I have a pen, I have an apple
   Uh! Apple pen
   I have a pen, I have pineapple.
   Uh! Pineapple pen

   Write a method that reads a String from the terminal that follows the pattern of the first and third lines of the PPAP song:

   "I have a <object 1>, I have a <object 2>".

   The method should return a String of the pattern

   "Uh! <Object 2> <object 1>".

   You can assume a comma always follows directly after the first object word, the object words are always preceded by the text "I have a ", and that there are no spaces or commas in either object word (Note: we are not worrying about a / an. Assume there will be no an). In your return String, include a space between <object 2> and <object1> and capitalize the first letter of object 2. (3 marks)

   For example:

   "I have a pointer, I have a null" will produce "Uh! Null pointer"
   "I have a scholar, I have a AP" will produce "Uh! AP scholar"

2. A palindrome is a word that can be read the same forwards and backwards, such as racecar or aibohphobia (the fear of palindromes). Write a method that reads a String from the terminal and prints to the terminal whether or not that String is a palindrome. Ignore capitalization and non-letter characters, so "A man, a plan, a canal: Panama." Is a palindrome, as is "Amy, must I jujitsu my ma?"
3. To convert from a base-10 integer to its base-2 (binary) equivalent, the number is divided by two, and the remainder is the least-significant bit. The integer result is again divided by two, its remainder is the next least significant bit. This process repeats until

the quotient becomes zero.

Write a method that reads a positive integer from the terminal, and prints out the binary equivalent using the above algorithm. You can use String and the concatenation operator to store the remainders as they are produced in the correct order.

4. Write a method that reads a sentence String from the terminal and translates it into Pig Latin. In Pig Latin, any word longer than 2 letters is encoded by putting the first letter at the back and adding "ay".

   For example:

   car → arcay
   starcraft → tarcraftsay
   I love starcraft → I ovelay tarcraftsay

   You can assume the sentence String will only contain letters and spaces.