### **SIENA COLLEGE**

**29th Annual** High School Programming Contest

##### **April 1, 2016**

###### Problem #6:  Logical Pirates

Background Information: A number P (each numbered 1, 2, … , P) of pirates are deciding how to split their loot of N gold coins, where N > P. They agree that each pirate in turn, starting with 1, must suggest how to split the loot and all living pirates will vote on it. If a suggestion gets a majority (strictly greater than 50%), they split the gold and go home. If a suggestion fails to receive a majority vote, the pirate who made the proposal (pirate *p*) is thrown overboard, and pirate *p+1* makes the next suggestion. The pirates who are completely logical have three ordered priorities, and will vote to

1. Keep themselves alive
2. Maximize their loot
3. Kill off other pirates.

So the ordering of priorities means that a pirate would rather get one gold coin than kill off another pirate.

When pirates make their suggestions, if there is a tie between choices of pirates to get k coins, preference is given to the pirate with the lowest number. For example, if a suggestion will be successful if either the 4th or the 5th pirate gets 3 gold coins, your algorithm must assign the coins to the 4th pirate.

###### Programming Problem:

Input:  A positive integer P ≤ 100 and a positive integer N ≤ 200, where P < N.

Output: The allocation of coins for each remaining living pirate, starting from smallest P value to

 the largest P value.

###### Example 1: Input:  1 100

######  Output:  100

###### Example 2: Input:  2 100

######  Output:  100

###### Example 3:  Input:  3 100

###### Output:  100 0 0

###### Example 4:  Input:  4 100

###### Output:  98 0 1 1