4.7 Determine The Tie

Name:	Determining the Tie
ID	UC_007
Description	Whenever there is a tie situation that has occurred between 2 things, i.e., a candidate or party, a fair coin will be tossed and determine who's the winner.
Actors	Programmers and testers.
Organizational Benefits	Determining a tie that is both efficient, unbiased, and fair that supports the election integrity.
Frequency of Use	Whenever there is a tie that has occurred during the software voting systems. Ties are rare so they are less frequent. Fair coin toss may be checked frequently by programmers and testers.
Triggers	In IR: 1. Instant Runoff is in popularity votes and both candidates have the same number of votes. 2. Majority has not been determined and two candidates have the same number of lowest votes. In CPL: 1. Party with the same number of percentages with a contested odd seat.
Preconditions	There is a tie that needs to be broken.
Postconditions	A tie has been broken and the winner is of the tie is given.
Main Course	1. Instant runoff is in popularity vote and both candidates have the same number of votes, assign heads to the first candidate, assign tails to the second candidate. 2. Flip a coin 1000 times and record the results. Then flip a coin on the 1001 to determine who's the winner of the popularity vote (see EX1). 3. Return the winner of the popularity vote.

Alternate Course	AC1 IR Lowest Candidate Elimination Tied 1. Assign head to the first incoming lowest candidate, then tails to the second incoming candidate. 2. Flip a coin 1000 times and then flip a coin on the 1001 to determine who's the winner of the coin flip (see EX1). 3. Return the winner of coin flip. AC2 CPL Tied Party Seat 1. Assign heads to the first incoming party and tails to the second incoming party. 2. Flip a coin 1000 times and record the results. Then flip a coin on the 1001 to determine the winner of the seat (see EX1). 3. Return the winner.
Exceptions	EX1 Result of Coin Flip is Biased 1. If one result is skewed, winning more than 60% of the time, redo step 2 of the related course (See EX2). EX2 Repeated Biased Coin Flip 1. If the coin flip is biased 5 times, record the result, and inform to the terminal there is a possibility of bias and display the coin flip results.