

### 4.3 Running the Instant Runoff Voting System

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| Name:                   | Instant Runoff Voting System   |
| ID                      | UC 003   |
| Description             | The program has finished processing ballot and determined to process it as an instant run off election. The winner will be determined, vote distribution, and tie breakers will occur.   |
| Actors                  | Election official, testers and programmers.  |
| Organizational Benefits | To effectively process the ballots and conduct the instant run off voting system for efficient and ease.   |
| Frequency of Use        | Run multiple times during the year at normal election times and special elections.<br><br>Will be run multiple times by testers and programmers.   |
| Triggers                | The ballot use case has finished processing the ballot file and is an instant run off ballot.  |
| Preconditions           | Ballot has successfully been processed.  |
| Postconditions          | The status of IR voting steps is done. The winner is determined.   |
| Main Course             | <ol style="list-style-type: none"><li>1. The system determines if there is a majority candidate, a candidate with 51% votes. If there is, the winner has been decided (EX1).</li><li>2. If there is no majority, the candidate with the lowest votes gets eliminated and the ballots for the lowest voting candidate gets redistributed (See Process Ballot use case).</li><li>3. If there is a tie between the lowest voting candidate, tie break (see use case breaking a tie). The person who won the coin toss will be eliminated.</li><li>4. Repeat step 1-3 till a candidate has been decided.</li></ol> |

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|                  | <ol style="list-style-type: none"> <li>5. If there is only 2 candidate and there is not a majority, do the popularity (see the popularity for IR use case).</li> <li>6. Once there is a winner, display the results (see results screen use case).</li> <li>7. Produce an audit file (see producing an audit file use case).</li> </ol> |
| Alternate Course | There is no alternative course for the instant run off.   |
| Exceptions       | <p>EX1 System gets a percentage out of range (0,100%)</p> <ol style="list-style-type: none"> <li>1. System notified user that an error has occurred</li> </ol>  |