Test Plan
Freedom in the Galaxy, Python Team

Version 1.0

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CS 383 Course Project

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Freedom In The Galaxy Test Plan, Python Group

RECORD OF CHANGES

Change Number	Date Completed	Location of Change (e.g. page # or figure #)	Brief Description of Change	Approved by (initials)	Date Approved
1	Nov 9	ALL	INITIAL PREP	-	-
2	Nov 11	Sec5.1 pg6 ; Sec6 pg6 ; Sec7 pg6 ; Sec8.5 pg6 ; Sec9 pg8-9 ; Sec9.2.1 pg9-13	1st Draft Review and Approval	EThom JHall	Nov 11
3	Nov 12-Nov25	Integration Tests	Added Integration Tests	-	-
4	Nov 26	Sec 9.3;	AI Test Cases	-	-
5	Nov 27-Dec15	Integration Tests	Added Integration Tests	-	-
6	Dec 16	Various	Reviewed Document	-	-
7	Dec 17	TCs	Merged Final Changes to TCs	-	-
8	Dec 18	Various	Changes for Review	-	-
9	Dec 19	Various	Review Content, Added Metrics	-	-

Contents

1 TEST PLAN IDENTIFIER

FREEDOM IN THE GALAXY MASTER TEST PLAN VERSION 1.0, PYTHON GROUP

2 REFERENCES

Use Cases and State diagrams are available at `https://github.com/Freedom-Galaxy`. Rules are contained in the SSDS available at `https://github.com/SSDS`.

3 INTRODUCTION

The purpose of this test plan is to state the processes used by the Python Team in testing the Freedom in the Galaxy software project. This test plan covers the entire testing plan for the project. The Python Team is divided into three sub teams. Each sub team each has different testing requirements and should prepare documents accordingly according to the requirements stated in this document.

4 TEST ITEMS

- Class Interfaces
- Class Interactions
- User Interface Functions
- Network Layer Functions
- API Level Functions
- GUI Functions
- Requirements stated in System Software Requirement Specification
- Requirements stated in System Software Design Documentation

5 SOFTWARE RISK ISSUES

Each piece of code has different levels of risk to the party. Standard library modules are usually designed to be backwards compatible are heavily tested before incorporation into the standard library, and have a high level of use. Therefore, the standard library modules have a low level of risk to this project. The tests will therefore be focused on the correct use of those modules.

Third party software has a higher level of risk than standard library and a much larger variance of quality. Some of the software has been heavily tested and some is only in a prerelease state. The level of quality of each third party module will have to be determined and testing scaled according. The level of risk can be reduced if sufficient tests are included with the library.

Testing will mainly focus on code written by Python Group members. This plan largely focuses on providing a testing plan that adequately covers both rules and implementation. As the code base is not

yet complete, the complexity of the code cannot be yet determined. Also, since the documentation is often incomplete, risk also arises because of poor documentation. Complete and improved documentation of all areas of code will reduce this risk.

Finally, because the length of this project is short and is not dependent on any third party schedules, there is no to little risk from new versions of software or failure of any third party.

5.1 Critical Risk Areas

1. RPyc

2. PyGame

3. SQLAcademy

6 FEATURES TO BE TESTED

Feature Description	Risk Level
Start a game	High
Smart AI	Low
Network communication	High
Play game with graphical interface	Med
Play game with text interface	Low
User Experience	Med

7 FEATURES NOT TO BE TESTED

Feature Description	Risk Level
Python Standard Library.	Low
RPyc	Low
SQLAcademy	Low
PyGame	Low
Speed of software.	Low

8 APPROACH

8.1 Testing Tools

The testing tools for use in this project include the standard library modules doctests, unittest, and the third party tool Nose. Each tool has different levels of complexity and strengths, so each test will be written in one of these tools depending on the tester and condition.

Help will be available from other members of the team for any questions involving the testing tools in this project. Tutorials are also available on the Python website for doctest and unittest. There is no scheduled rraining for Nose.

8.2 Metrics

Products Metrics for this project will be the number of rules implemented. For each rule, a metric value is specified in the rules appendix of the SSDS. This metric value is a number between 1 and 10. This number is based on several criteria, such as difficulty of the rule, priority of the rule, and how close other rules are to the rule. In order to apply any metrics, the relevant TCS test must be implemented and passed. This implementation must be signed off by another member or the team and the results attached to the necessary places in the project documents. After these requirements have been completed, the metric value can be earned.

8.2.1 Simple Metrics

The following simple metrics have been computed:
Lines of code: 5180
Number of files: 49

8.3 Configurations

The AI and UI will be tested using both the Rebel and Imperial player, and all User type tests for both player types will be executed.

8.4 Software

The software will be developed with Python 2.7.5 with doctest and unittest of the same version. The current version of Nose is 1.3.0, the current version of Pygame is 1.2.1.

8.5 Hardware

The hardware specifications used for testing will be at or higher than the minimum hardware specifications for Python 2.7.5 and Pygame.

8.6 Automated Testing

The automated test process will be divided into three phases, Unit testing, Integration testing and System testing.

8.6.1 Unit Testing

Unit testing will be used to validate individual classes objects. Some objects will not be required to be validated by unit testing, such as the user interface and the supporting classes and any classes or code that is exempted according to section 5. A template is available for adding unit tests to this document.

Each team should develop TCSs as needed for their code. Each TCS should include tests for all classes as required and for each test, validate as many inputs as needed to test that the class operates as required by the rules covered in the SSRS, and also according to an requirements and design documents applicable to that class. Unit tests should focus on those test types mentioned in the lecture, such as coverage, edge cases, etc.

8.6.2 Required Class Unit Tests

Unit testing for each class in the final product will consist of validating the class public interface and all expected output for each class. Public variables and methods for every class are required to pass the following tests:

- validation using expected data input

- validation using erroneous data input, including None or empty values

- class instantiation

If the variable is not open to testing due to being private or otherwise not accessible to the user or other programs, such as testing, the unit instead will be considered to be the smallest practical testable unit possible.

All functionality accessible by the user must be unit tested or,if not possible tested by means of integration or systems testing, except where indicated in section 5. This includes GUI capabilities.

8.6.3 Integration Testing

Integration testing will validate the defined associations between classes. This will be an incremental process performed as new classes are created and after classes have successfully passed their unit testing phase or as necessary for deadlines.

Integration Tests to be Performed

- Class sets under test exhibit the relationships as defined in the class diagram

- Methods and functions are called using the correct parameters

- Methods and functions return the expected data types or structures.

Integration should be done at the group level. This should include mock objects or mock data to simulate any objects outside of the team as required. Integration testing should cover all reasonable combinations of objects in the game. These tests should be documented in TCSs.

8.6.4 System Testing

System testing will exercise the overall software product to verify conformance to defined game rules. System testing will use predefined scenarios of initial states representing possible game states that a user will encounter. Each scenario will be tested for acceptable results for each possible user action that may occur. Acceptability will be defined by the game rules.

8.7 Manual Testing

Manual testing will be required for the portions of the program that can not undergo automated testing. This section applies to the testing of the user interface to simulate user orientated testing to verify conformance to the documented use cases.

9 ITEM PASS/FAIL CRITERIA

9.1 Reporting a failure

If a failure happens during the execution of any test, a failure report should be submitted to provide information of the failure. Failure should be reported in the issue page of the repository.

The name of the issue should be the name of the name of the code file and the name of the test if applicable.

9.1.1 What Constitutes a "failure"?

Any deviation from a specification, e.g. SRS, UML diagrams.

9.1.2 What Does Not Constitute a "failure"?

Any unit or action that does not have any requirements documentation, cannot cause a 'failure'.

9.1.3 What to do when a "failure" is discovered"?

Produce a SCR to document each "failure" that needs to be corrected.

9.1.4 What if a specification document is incorrect (e.g. outdated, misstated)?

This also constitutes a "failure" and an SCR should be created.

9.1.5 What sections to include in an SCR

Failure Identified
Expected Outcome
Actual Behavior
Steps to reproduce

Each section should be brief and to the point, but yet convey enough information for the coder to fix the problem.

9.2 Unit Testing Pass/Fail Criteria

Each of these tables can be expanded to cover priority and type of test (i.e. unit, integration, system) if needed. The unit_test_template.tex file contains a template for all unit tests to be included in this document.

9.3 Integration Testing Pass/Fail Criteria

9.3.1 Capture

#	Rule Description	Test Description	Expected Result

1	A unit must be assigned to "guard" a captured opponent [12.81].	Succeed in capture combat.	Captured character is assigned a guard, either automatically or by prompting user.
2	Captured character must be moved with the character assigned to "guard" them [12.81].	Move character "guarding" a captured character.	Captured character moves to location guard moves to.
3	Guarding character cannot perform missions [12.81].	Attempt to assign guarding character to a mission group.	Attempt rejected.
4	If a character is captured and combat is still being resolved, the captured character contributes nothing to either side [12.84].	Successfully capture during capture combat.	Combat differential is refactored to remove captured character's benefits to forces.
5	Decision to capture or kill applies to all round of that combat [12.8]	The user is not asked against to decide between capture or kill or option is not available	-
6	Only the attacker may declare capture combat.[12.85]	Attacker declares capture combat	Combat is of type capture.
7	-	Defender declares capture combat if available and attacker declares kill combat	Combat is of type kill.
8	A captured character unit can also be freed if the captured character is not stacked with any enemy units at any time. [12.82]	Capture stack is eliminated	Captured character is freed.
9	-	Capture stack moves without captured character	Captured character is freed.
10	-	Capture stack moves with captured character	Captured character is moved with stack.

9.3.2 Combat

#	Rule Description	Test Description	Expected Result
1	If a character stack in an environ is detected and there are no friendly military forces present, if they successfully break off from combat, they are no longer found and are no longer a part of combat [12.51].	Break off from combat.	Character state is no longer found and combat is terminated.
2	If a character receives cumulative damage equal to their number of endurance points that character is dead and is removed from play [12.73].	Engage in combat that results in enough wounds to match a character's endurance and assign those wounds to that character.	Character is removed from play.
3	If attacking group is a squad, combat is firefight [12.31].	Attack with squad and check combat type.	Combat type is firefight.
4	Inactive characters do not contribute to combat rating or suffer damage [12.42].	Engage in combat and set one character to inactive.	Character's stats do not contribute to combat rating and cannot have wounds assigned to them after battle.
5	Attacking character does not have inactive forces [12.44].	Attack enemy forces.	No option to set inactive forces.
6	Leaders are not eliminated in military combat but if their forces are destroyed they are attacked by a squad [10.45].	Engage in military combat with a leader where all forces are destroyed.	Leader is not destroyed but is attacked by a squad.
7	Characters stacked with military units are not effected by military combat and do not effect military combat but if their military units are eliminated, they are attacked by a squad [10.6].	Engage in military combat with a stack containing characters where all military forces are eliminated.	Characters do not effect military combat and are not eliminated but are engaged in squad combat.

9.3.3 Game Start

#	Rule Description	Test Description	Expected Result
1	At game start, if player controls a planet, they may distribute characters and military forces on environs of those planets [16.12]	Player attempts to place a unit on the environ of a planet the player does not control	Unit does not occupy specified environ. ??? Fail silently or notify player ???
2	At game start, if player does not control a planet, characters will "arrive from space" at the beginning of their operations phase. [16.12]	Player attempts to place units on environ of a planet they do not control	Unit does not occupy specified environ. ??? Fail silently or notify player ???
3	At game start, Imperial player places units first [16.14]	Rebel player attempts to place units *before* Imperial player	Rebel player is unable to place forces.
4	At game start, Imperial player places units first [16.14]	Rebel player attempts to place units *while* Imperial player is distributing their forces	Rebel player is unable to place forces.
5	Rebel game turn is first [16.14]	At start of game Imperial player attempts to begin turn *before* Rebel player had begun turn	Imperial player is unable to begin turn.
6	Rebel game turn is first [16.14]	At start of game Imperial player attempts to begin turn *while* Rebel player is in their turn	Imperial player is unable to begin turn.
7	At start of game, all friendly units on the same environ are placed in the same stack [16.13].	Try and create a second stack in an environ at the beginning of play	Second stack is not constructed.
8	At start of game, if rebel player has units to distribute, units placed must match environ type [16.13].	Attempt to place rebel units in environ that does not match their type.	User unable to place forces.

9.3.4 Game Turn

For each set of tests, test both Rebel players and Imperial players.

#	Rule Description	Test Description	Expected Result
1	Mission Assignment only occurs on the player's Mission Assignment Segment	Start player Mission Assignment during player's Mission Assignment Segment	Mission Assignment Accepted.
2	-	Start non-phasing player Mission Assignment during player's Mission Assignment Segment	Mission Assignment Rejected.
3	-	Start player's Mission Assignment during player's Mission Action Segment	Mission Assignment Rejected.
4	-	Start player's Mission Assignment during player's Operations Phase	Mission Assignment Rejected.
5	-	Start player's Mission Assignment during player's Mission Phase	Mission Assignment Rejected
6	-	Start Rebel Mission Assignment during the Imperial's Operations Phase	Mission Assignment Rejected
7	-	Start Rebel Mission Assignment during the Imperial's Search Phase	Mission Assignment Rejected
8	-	Start Rebel Mission Assignment during the Game Turn Interphase	Mission Assignment Rejected
9	During a player's Movement Segment, only the phasing player's units can move	Move movable unit of phasing player	Movement Accepted
10	-	Move movable unit of non-phasing player	Movement Rejected
11	During a player's Reaction Segment, only the non-phasing units can move	Move movable unit of non-phasing player according to reaction rules during Reaction Segment	Movement Accepted
12	-	Move movable unit of phasing player according to reaction rules	Movement Rejected
13	-	Move moveable unit of non-phasing player according to reaction rules not during Reaction Segment	Movement Rejected

9.3.5 Missions

#	Rule Description	Test Description	Expected Result
1	Diplomacy missions by a rebel player on a patriotic planet have 2 bonus draws subtracted [13.2].	Undergo diplomacy mission on a patriotic planet.	Total bonus draws are reduced by two.
2	Diplomacy missions by a rebel player on a planet in dissent have 1 bonus draw added [13.2].	Undergo diplomacy mission on a planet in descent.	Total bonus draws are increased by one.
3	Subvert troops, start rebel camp and scavenge missions can only be performed by the rebel player [13.2].	During the missions phase as Imperial player, view available missions.	Scavenge, start rebel camp and subvert troops missions are not available options.
4	Diplomacy missions by a rebel player on a patriotic planet have 2 bonus draws subtracted [13.2].	Undergo diplomacy mission on a patriotic planet.	Total bonus draws are reduced by two.
5	A rebel camp is equivalent to a mission group for mission purposes [13.2].	Assign rebel camp a mission in an environ during the mission phase.	Rebel is assigned mission.
6	Rebel camps cannot receive bonus draws [13.2].	Draw action card resulting in a bonus draw with only a rebel camp doing missions in an environ.	No bonus draws are awarded.
7	Rebel camps are never effected by the effects of an action card.	Perform mission with rebel camp and draw an action card resulting in combat.	Rebel camp does not engage in combat.
8	There can never be more than one rebel camp in an environ [13.2].	Attempt start rebel camp mission in an environ with a rebel camp.	Mission is not available.
9	Rebel camps cannot be moved [13.2].	View movable units in an environ with a rebel camp during operations phase.	Rebel camp is not displayed.
10	Characters cannot accompany rebel camps on a mission [13.2].	Break mission stack into mission groups and attempt to add a character to a rebel camp mission group.	Character does not occupy rebel camp's mission group.
11	Spaceship quest, summon sovereign, question prisoner and steal resources missions are not available in the star system games [13.2].	View available missions during missions phase of a star system game.	Spaceship quest, summon sovereign, question prisoner and steal resources missions are not available.

12	Maximum number of action cards drawn for mission groups in an environ is equal to the environ size [13.3].	Draw four action cards in an environ of size four.	Only bonus draws remain.
13	Bonus draws are only available is mission group has drawn maximum number of action cards for the environ size [13.3].	Quit missions in an environ of size 4 after drawing 1 action card when a character has bonus draws for the mission type.	No bonus draws available.
14	Action card must be resolved before mission letter can take effect [13.3].	Die in combat with creatures resulting from an action card that would have otherwise resulted in mission success.	Mission does not succeed.
15	Except for the case of the NPP searching for characters on a mission, if an action drawn is the same as an action previously drawn in that environ, the action is ignored [13.42].	Draw an action for creature combat after creature combat has already been resolved during that turn in that environ.	Mission group does not engage in creature combat.
16	In the case of an action card that allows the NPP to search for characters on a mission, this action may be repeated n times where n is the number of mission groups in that environ [13.48].	Draw action card for two mission groups resulting in NPP search after NPP has already searched once in the environ.	NPP performs search for mission groups in current mission environ.
17	In the case of an action card that allows the NPP to search for characters on a mission, this action may be repeated n times where n is the number of mission groups in that environ [13.48].	Draw action card for two mission groups resulting in NPP search after NPP has already searched twice in the environ.	NPP does not perform a search.
18	If an action card is drawn that contradicts an action drawn previously for a mission group in an environ in a turn, the contradictory action is ignored [13.42].	Draw an action card that prohibits bonus draws after drawing an action card that grants one extra bouns draw.	Extra bonus draw is kept, bonus draws are not prohibited.

19	If a single mission group is affected by an action card, that mission group is randomly chosen from all active mission groups in that environ [13.43].	Draw action card resulting in creature combat in an environ containing two mission groups.	One of the two mission groups is chosen at random to engage in creature combat.
20	If no creature is named by an environ the PP is attacked by sentry robots only if the NPP controls the planet [13.46].	Draw creature attack in an environ where no creature is named and the NPP controls the planet.	Player engages in combat with sentry robots.
21	If no creature is named by an environ the PP is attacked by sentry robots only if the NPP controls the planet [13.46].	Draw creature attack in an environ where no creature is named and the NPP does not control the planet.	Player does not engage in combat.
22	If a planet is in a state of rebellion or in rebel control, the rebel player ignores irate locals attacks [13.47].	As the rebel player performing a mission on a planet under rebel control, draw action card resulting in irate locals attack.	Player does not engage in combat.
23	If a planet is in a state of rebellion or in rebel control, the rebel player ignores irate locals attacks [13.47].	As the rebel player performing a mission on a planet in rebellion, draw action card resulting in irate locals attack.	Player does not engage in combat.
24	If an action card is drawn that results in characters being found and there are NPP forces in that mission environ, the NPP's forces must attack one mission group. [12.15]	Draw an action card resulting in characters found in an environ where there are enemy fores.	Combat is initiated by either enemy characters or enemy squad at NPPs choice.
25	If an action card is drawn that results in characters being found and there are no NPP forces in that mission environ, characters are not detected. [12.15]	Draw an action card resulting in characters found in an environ where there are no enemy fores.	Characters are not found.
26	Gather information mission cannot be performed on a planet under control of PP is there are NPP characters or military units in the mission environ [15.52].	View available missions on a planet under PP control in an environ where NPP military or detected character forces are present	No gather information mission available.

27	Coup and diplomacy missions cannot be performed on a planet in a state of rebellion or under rebel control [15.57].	View available missions on a planet in rebellion or under rebel control	No coup or diplomacy missions available.
28	If a planet's state is "rebellion stopped," the loyalty marker and the rebel-control marker are moved together [15.75].	Complete mission that results in shifting loyalty marker.	Rebel-control marker shifts with loyalty marker.
29	A coup mission requires a character with an intelligence rating of at least 1 [13.2].	Attempt to assign a coup mission to a mission group without a character with an intelligence rating of at least 1.	Mission is not assigned to mission group.

9.3.6 Movement

#	Rule Description	Test Description	Expected Result
1	Characters can only move from planet to planet using a spaceship [9.0].	Attempt to move characters without a spaceship stacked with mobile military units.	Characters are left on the environ.
2	Every unit/character can be moved at most once during operations phase [9.0].	Attempt to move a unit/character after moving it once.	Unit/character does not move.
3	Non-phasing player may make a reaction move only once the phasing player is finished with their operations phase [9.0].	Attempt to move NPP units before PP is done with operations phase.	NPP units do not move.
4	Non-phasing player may make a reaction move only once the phasing player is finished with their operations phase [9.0].	Attempt to move NPP units during PP's operations phase.	NPP units do not move.
5	Military units cannot move to an environ that is populated by a number of military units equal to it's size [9.5].	Attempt to move a stack of one military unit to an environ populated by a max number of military units.	Military unit does not occupy environ.
6	A spaceship cannot carry more characters than it's capacity stat dictates [9.56].	Construct a character stack with a spaceship that contains more characters than the capacity of the spaceship dictates. Attempt to move stack to another environ.	Only the number of characters equal to the capacity of the spaceship move.
7	The non-phasing player may make a move for each environ containing PP military and detected forces [9.6].	Enter reaction move phase when there are n environs containing military units and detected forces.	Non-phasing player is allowed n moves.
8	A reaction move cannot be made from one planet to another [9.61].	Attempt to move a stack from planet to planet for a reaction move.	Stack does not occupy new environ.
9			

9.3.7 PDBs and Detection

#	Rule Description	Test Description	Expected Result
1	Every planet has a PDB [8.0].	Initialize galaxy.	Every planet has a PDB.
2	The level of a PDB is 0, 1 or 2 [8.0].	Initialize galaxy.	PDB levels conform to states 0, 1 or 2
3	PDBs are either up or down [8.0].	Initialize Galaxy.	PDBs conform to states up or down.
4	In Star System Games, the level of a PDB cannot be improved [8.13].	(????) Succeed in a mission (????) that would improve PDB level.	PDB level does not improve.
5	PDB can only be used if its status is "up" [8.2].	Move characters from an environ on a planet where the PDB is down in a spaceship.	Characters do not undergo detection routine.
6	If characters move across a planet without a spaceship they do not undergo the detection routine [9.0].	Move character stack from one environ to another on the same planet.	Characters do not undergo detection routine.
7	If characters move across a planet with a spaceship may undergo a detection routine [9.0].	Move character stack from one environ to another on a planet with a PDB up and at level 1 or higher .	Character stack undergoes detection routine.
8	If a PDB incurs a loss of 2 when attacking it is placed in the "down" state [9.25].	Incur a loss of 2 with an attacking PDB.	PDB state is "down."
9	If a PDB incurs a loss of 3 when attacking it is placed in the "down" state *and* it is reduced a level [9.25].	Incur a loss of 3 with an attacking PDB.	PDB state is "down" *and* level is decremented by 1.
10	A loss of 1 incurred by a PDB does nothing [9.25].	Incur a loss of 1 with an attacking PDB.	PDB does not change state.
11	If a spaceship leaves a planet unable to conduct a detection routine, it and its characters are no longer detected [9.45].	Move detected character stack in a spaceship from one environ to another on a planet unable to conduct a detection routine.	Characters are no longer detected.
12	Stacks with military units are detected.	Move military units into a stack of undetected characters in an environ.	Characters are detected.

13	If a detected character stack leaves an environ "undetected" by the enemy PDB they are no longer detected [9.31].	Move detected character stack in a spaceship from an environ on a planet with an active PDB where the detection routine results in "undetected".	Characters are no longer detected. Character stack is no longer detected.
14	A PDB with a level 0 only detects regardless of the outcome of the detection routine [9.32].	Undergo detection routine with a PDB at level 0 resulting in "eliminated."	Character stack is detected.
15	Detected characters moving from one environ to another containing no detected characters or military units on the same planet without a spaceship are no longer detected [9.35].	Move detected characters to another environ on the same planet that contains no detected characters and no military units.	Characters are no longer detected.
16	Military units are always detected but can be attacked by a PDB.	Move military units from space into a planet's environ.	Military units undergo detection routine and are subject to attack according to the military combat results table.
17	If a spaceship is "detected and damaged" twice in the same turn, the second "detected and damaged" outcome is equivalent to "eliminated" outcome [9.35].	Move from one environ to another on a planet with an active PDB at level 1 or more and incur "detected and damaged" outcome twice.	Characters and spaceship are eliminated.
18	In the star system games, if a detection routine results in "detected and damaged," the spaceship is eliminated when the destination is reached [9.31].	Undergo detection routine that results in "detected and damaged"	Spaceship is eliminated on arrival.
19	If a detection routine results in "eliminated," the spaceship and all characters on board are eliminated immediately [9.31].	Undergo detection routine that results in "eliminated"	Spaceship and characters in it are eliminated.

9.3.8 Planets and Control

#	Rule Description	Test Description	Expected Result
1	At the beginning of play, every planet has a loyalty counter in 1 of five states [15.1]	Check every planet's loyalty after game starts.	Loyalty counters are not null.
2	A loyalty counter at patriotic cannot be increased further in the Imperial player's favor [15.13].	Successful Imperial "Diplomacy" or "Political Tract" mission when loyalty counter is set to patriotic.	Loyalty counter does not change state.
3	A loyalty counter at unrest cannot be increased further in the Rebel player's favor [15.13].	Successful Rebel "Diplomacy" or "Political Tract" mission when loyalty counter is set to patriotic.	Loyalty counter does not change state.
4	Loyalty counter on a planet in a state of rebellion or rebel control cannot be moved [15.14].	Successful Rebel "Diplomacy" or "Political Tract" mission when planet is in a state of rebellion or rebel control.	Loyalty counter does not change state.
5	A planet in a state of rebellion is controlled by neither player [15.4].	Put a planet in the state of rebellion.	"Control indicator" is in neither a rebel or imperial state.

9.3.9 Possessions

#	Rule Description	Test Description	Expected Result
1	When rebel player receives a possession it must be immediately assigned to a character [14.11].	Get possession as rebel character.	Prompt to assign possession to character.
2	When a rebel player receives a possession from a successful mission, the player must assign the possession to a character in that mission group [14.11].	Get possession from mission and try to assign to character outside of mission group.	Character cannot receive possession.
3	Possessions are transferred between characters at the beginning of the missions phase [14.12].	Attempt to transfer possession during operations phase.	Possession is not transferred.
4	Possessions may only be transferred between characters in the same environ [14.12].	Attempt to transfer possession to character in another environ.	Possession is not transferred.
5	A character may only have one companion possession at one time [14.13].	Attempt to assign companion possession to character that already has a companion possession.	Character is not assigned companion possession.
6	A character may only have one spaceship possession at one time [14.13].	Attempt to assign spaceship possession to character that already has a spaceship possession.	Character is not assigned spaceship possession.
7	During star system game, if a possession becomes inoperative, it is lost [14.22].	Set possession to inoperative.	Possession is removed from play.
8	If possession card states "lost after one use", it is returned to the possession card deck after use [14.23].	Use possession that is lost after one use.	Possession is removed from character inventory and put back in possession deck.
9	If a character is killed, any possessions besides spaceships are removed from play [14.25].	Kill a character with possessions. Kill a character with a spaceship.	Possessions are lost and not returned to deck. Spaceship is not lost.
10	Destroyed possessions are not returned to the possession deck [14.26].	Destroy a possession.	Possessions are lost and not returned to deck.

11	If a rebel character is captured, their possessions, except for spaceships, are removed from play [14.26].	Capture a rebel character.	Possessions are lost and not returned to deck. Spaceship is not lost.
12	A companion counts as a passenger on a spaceship [14.3].	Attempt to add a character with a companion to a ship that has only one more spot available.	Character does not board ship.

9.3.10 Searching

#	Rule Description	Test Description	Expected Result
1	Characters stacked with military units can be unstacked and then the characters can perform a search. [11.21]	Attempt to perform character search with a character stacked with military.	Search is not conducted
2	-	Attempt to perform character search with no character stacked with military.	Search allowed.
3	Characters stacked with military units cannot be searched. [11.1]	Attempt to search for characters stacked with military units.	Search fails
4	Search is conducted with either military units or characters. Characters stacked with military units cannot be used to conduct character search unless they are moved from the military stack [11.21].	Attempt to perform character search with a character stacked with military.	??? Either search is not conducted or a military search is conducted instead. ???
5	Only the units in a successful search group may attack [11.23].	Successfully search with characters and choose combat.	Character combat is initiated.
6	Using characters to search results in their detection [11.31].	Search with undetected characters.	Characters become detected.
7	Searching may only be done in environs where a player has units and there are *detected* enemy forces [11.1].	Attempt to search an environ where there are no detected forces.	No search is conducted.

9.3.11 Stacking

#	Rule Description	Test Description	Expected Result
1	Number of military units in a stack, in an environ can never exceed the environ size [9.5]	Try and place a military unit in an environ that is at capacity	Military unit is not added to the stack.
2	There is no limit to the number of units in a stack [9.5].	Construct an artificial stack out of all military units + all characters + all ships	All units, characters, ships occupy the same stack.
3	At the end of the operations phase, an environ may have at most two stacks, one with characters eligible for missions and their spaceships and another for the rest of the player's forces [9.5].	Attempt to end operations phase with three stacks in an environ	??? Combine forces automatically or prompt user to refactor forces??? [16.14]
4	Character's stacked with military units must have leadership rating of at least 1 to be named leader [9.52].	Attempt to name leader with less than 1 leadership rating.	Character does not assume leadership of stack.
5	If a stack has no military units and multiple spaceships, the each spaceship must move as a separate stack and undergo any detection routines accordingly [9.54].	Attempt to move a stack with two spaceships and no military units.	Movement is not allowed until a spaceship is specified.
6	A spaceship may not be moved unless it is stacked with military units or a character with navigation rating of 1 or higher [9.55].	Attempt to move a spaceship stacked with only a character with navigation rating less than 1	Spaceship does not move.
7	If at the end of the operations phase, a character is not stacked in the mission stack, character cannot perform missions during the missions phase [9.57].	During missions phase, attempt to add character not stacked in the mission stack to a mission group.	Character is not added to mission group.

9.3.12 Turn Integration

#	Rule Description	Test Description	Expected Result
1	If imperial player has less spaceships at the end of their turn than at the beginning of the game, *and* they have an imperial knight on an imperial controlled planet, they can receive a spaceship [14.61 & 15.73].	End imperial turn with an imperial knight on an imperial controlled planet and with less spaceships in play than at the beginning of the game.	Imperial player has the option to receive a spaceship.

9.3.13 AI

#	Rule Description	Test Description	Expected Result
1	Imperial Units in the same environ as detected Rebel units may declare combat.	Test two things: 1) AI decides to attack the Rebel Units. 2) AI decides not to attack the Rebel Units	Both cases occur depending on game state.
2	If a character(s) engaged in combat wish to break off, they may attempt to do so. If successful, they are hidden and will take no further damage	Test two things: 1) AI attempts to break off from combat. 2) AI determines flight is futile and fights to the death.	Both cases occur depending on game state
3	A character engaged in a firefight may be captured or killed	Test two things: 1) AI attempts to capture an opponent. 2) AI attempts to kill the opponent.	Both cases occur depending on game state.
4	AI can decide to search for a detected Rebel character or unit stack	Test two things: 1) AI searches for the Rebel unit(s) 2) AI doesn't search for the Rebel unit(s).	Both cases occur depending on game state.
5	A unit can move between environs or planets.	AI moves a unit or character to a different environ/planet	The unit moves (and the outcome changes) based on game state.
6	A player may assign a mission to a character	AI assigns a mission to a character.	The character is assigned the mission based on the game state and performs it best the character can.

9.4 System Testing Pass/Fail Criteria

None

9.5 User Interface Manual Testing Pass/Fail Criteria

None

10 SUSPENSION CRITERIA

The automated testing procedure shall be completed in the following order:

1. Unit Testing

2. Integration Testing

3. System Testing

Each item to be tested is required to pass each unit test of a classification of 1 with 100% success before it can be passed to a higher level of testing. This complete success can be waived for the following reasons:

- Feature under test will not be included in the upcoming deliverable.

- Feature under test will not be included in the final product.

- Feature under test is complex and meeting the test requirements will delay the deliverable.

Decision to allow a feature to proceed to a higher level of testing shall be determined by team leader.

11 TEST DELIVERABLES

- Test Cases

- Test Logs

- Incident Reports

- Outputs

- Corrective Actions

11.1 Test Cases

All unit tests, integration tests, and system tests should be documented in TCSs. The name of a TCS should match the module name (e.g. Character Class TCS) or functions (e.g. Main Menu TCS). TCS should be developed from requirements document and ideally should test every requirement of those documents.

12   REMAINING TEST TASKS

- Division of Labor by each group leader.

- Implementation of testing.

- Complication of testing results.

13   ENVIRONMENTAL NEEDS

None

14   STAFFING AND TRAINING NEEDS

Training on portions of the project shall be carried out by the authors of the code and the documented design and the responsibility of said authors. Help is available from other members of the team.

15   RESPONSIBILITIES

This document is the responsibly of the all team members who's tasks fall under the requirements of this documents, such as those assigned to write tests, etc. Robert Meine has primary responsibility of this document. Please contact Robert Meine if you have any concerns or issues with this document.

16   SCHEDULE

Deliverable	Description	Due Date
Test Plan version 1.0	Completion of first draft of the complete Test Plan documentation.	11/12/2013
Test Assignment	Assign tests to team members	11/14/2013
Delivery of Unit Tests	Completion of assigned Unit Tests	11/25/2013
Delivery of Integration Tests	Completion of assigned Integration Tests	12/5/2013
Delivery of System Tests and Manual Tests	Completion of assigned System Tests	12/10/2013
Delivery of Software Metics	Completion of assigned metrics	12/13/2013
Delivery of All SSDS SSRS related testing requirements		12/17/2013

17   PLANNING RISKS AND CONTINGENCIES

Because the end of the semester is fixed, there are no contingencies if the product does not meet requirements by that date. Public beatings will be carried out as needed.

18   APPROVALS

Approval is everyones responsibility since all students will be evaluated on this document.

19   GLOSSARY

SCR - Software Change Request TCS - Test Specifications Document