**CSC190 Software Engineering**

**Term Project Deliverable III (Implementation II)**

Total: 250pts Due: Tuesday 05/16/2018

Name: \_Ryan LaRouche\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_Craig Metzdorff \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_Nick Sena\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_Jack Zheng\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: \_Scott Stubbs\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What to Turn in: Submit the following in Blackboard. All reports must be in Word or PDF.**

(1) Brief Implementation Report

(2) Team Efforts Report

(3) Zip of all Source Code

By Wednesday 05/16/2018 your team needs to deliver 100% of standard features. Your report should consist of the following components.

**Pacman Requirements**

Please briefly indicate the status of all features. Note: extra features will not be counted here, but they be applied to the total sum of all milestones. Max points received for this part: 100% of 200 points.

|  |  |
| --- | --- |
| **Requirement** | **Completed (Y/N)** |
| **REQ1 (40%)** | **Y** |
| **REQ2 (40%)** | **N** |
| **REQ3 (20%)** | **N** |
| **BR1 (20%)** | **N** |
| **BR2 (1%)** | **N** |
| **BR3 (1%)** | **N** |
| **BR4 (1%)** | **N** |
| **BR5 (1%)** | **N** |
| **BR6 (20%)** | **N** |
| **BR7 (3%)** | **N** |

ID Points Description

REQ1 40 The game should be built entire upon the game engine you developed. No 3rd party game engine should be used. Your game engine should support a system of displaying, animating sprites and collision detection

REQ2 40 The pac-man game logic should generally follow the pacman wiki page description – that is you need fully support all sprites, packman, blinky, inky etc. The game should provide pac points and should be able to display points. Details: 2.1. standard pacpoints (no powerpellets needed) and a simple scoreboard reflecting the number of pacpoints eatern by pacman. 2.2 Blinky: should be tracing pacman. 2.3 Pinky: always heading to the end of the line fragment that the pacman is heading to. 2.4 Inky: 50% time tracing pacman and 50% heading away from pacman. 2.5 Clyde: 50% time tracing pacman and 50% heading to left-bottom corner. (8 points each)

REQ3 20 Should provide the ability to load a map defined in text file. At least 4 types of objects supported: pacman, pacdot, wall, and 4 ghosts.

-- Additional Bonus Points Available --------------------------------------------

BR1 20 Network play

BR2 1 Load and Save

BR3 1 Music

BR4 1 Different difficulty level

BR5 1 Multiplayers for local version

BR6 20 Android version (only standard features required)

BR7 3 A coordinated attack using 4 ghosts, applying command pattern

**Part II. Team Collaboration Report [50 pts]**

This is a group project and **each member of the team will receive the same grade**. Please submit a separate report describing the efforts of each member **using the following table**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Task ID** | **Description** | **Location of Work in Deliverable** | **Estimate of Time** | **Actual Time Spent** |
| Ryan LaRouche | | | | |
| T1 | Game Engine Drawing Improvements | GameEngine.java and Game.java | 3 | 3 |
| T2 | Pacman Movement Improvements (e.g. Collision bugs) | Pacman.java | 2 | 2 |
| T3 | Game Engine UI Integration (e.g. Buttons and TextFields) | GameEngine.java | 2 | 3 |
| T4 | Game Engine Sprite Handling | GameEngine.java | 2 | 2 |
|  | | | Total: 9 hours | Total: 10 hours |
| Nick Sena | | | | |
| T5 | Began scoreboard implementation |  | 2 | 2 |
| T6 | Began implementation of Fruit / Timer | Fruit.java | 3 | 3 |
| T7 | Testing Project | Full Project | 1 | 1 |
|  | | | Total: 6 | Total: 6 |
| Craig Metzdorff | | | | |
| T7 | Implement Additional MapTiles | Map Packages in both Game and Engine (took long because the ghost tiles required I account for things I previously forgot to put in the map system). | 6 | 6 |
| T8 | Draw additional Sprites | Images folder | 1 | 1 |
| T9 | Fix misc bugs (memory leak, PacMan leaving the grid, etc.) | Entire project | 1 | 6 |
|  | | | Total: 8 | Total: 13 |
| Jack Zheng | | | | |
| T10 | Started implementation for Ghosts |  | 5 | 6 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | | | Total: 5 | Total: 6 |
| Scott Stubbs | | | | |
|  | FruitSpawn |  | 2 | 3 |
|  | Bug Edits / Helped with Ghost implementation |  | 6 | 3 |
|  | | | Total: 8 | Total: 6 |
| Total Estimated Efforts: 36 hrs, Avg Estimate/Person: 7/2 hrs, Total Spent: 41 hrs, Avg Spent/Person: 8.2 hrs | | | | |

You also need to submit **GIT merge report** to prove the fair assignment/contribution of all members. You need to show the **screenshots** of the following two commands:

(1) merge diagram: git log --all --decorate --oneline –graph

(2) Contribution of all members. Run the following in the **src** folder:

git ls-files -z | xargs -0n1 git blame -w | perl -n -e '/^.\*?\((.\*?)\s+[\d]{4}/; print $1,"\n"' | sort -f | uniq -c | sort -n

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Rubrics** | **Weight** |
| Report | Clear report of contributions | 10pts |
| GIT Merge Snapshot | Shows a well-managed implementation process and contribution of all members. Please make sure that when members submit branches, **git name/account information is set up correctly**, ***from the beginning***. | 40pts |

It is understandable that there is no way to guarantee absolutely fair division of the work. However, I do expect that each member completes at least 75% of the average work load. **If one member completes too little work (the instructor reserves the right to assign a separate grade for the student.** **Free riders are absolutely not allowed in this class.** The instructor has the right to randomly interview some students and ask questions about the work they have completed. **False/inaccurate report of efforts will subject the entire team to 0 for the assignment. Two violations directly lead to F in final grade.**

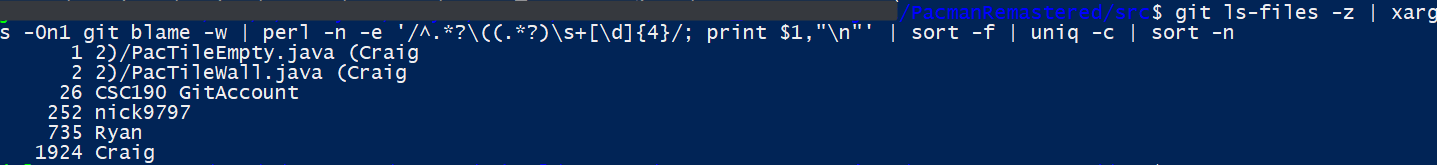
Please notice that once the group is formed, you cannot change group membership until next deliverable of the project. It is your best interest to encourage all members actively contribute to the satisfactory completion of the entire project because all of you will receive the same grade. If in the rare case that a member did not fulfill the responsibility, **please indicate it in the last column of the efforts table**.

In many cases, to reduce the risk in implementation, or **to guarantee the quality of the project, for the same task, you can assign it to multiple member**s (e.g., do two alternative designs for each external interface and submit the best work). The redundancy comes at the extra cost of time and efforts. You should discuss with your peer members and decide what might be the best strategy for your team.

**GIT Reports:**

Below is an image displaying team member contribution by line count.

*Note:* “CSC190 GitAccount” is Ryan’s work from early in the semester as well as the work made by Scott and Jack. It appears that Scott and Jack did not set up their name/account info on their machines. before he had correctly set up his git name/account.



Below is a sequence of images portraying the GIT merge report.

\* dbd3e1b Started adding new tile type for spawning fruit.

\* 05ab615 Started adding some classes for a Spawn tile; updated gitignore because it wasn't actually ignoring some files.

| \* c36db4b FruitSpawn

| \* 5cd527d Added to SpawnFruit

| | \* 3127ed3 Added fruit class to game, just need to get timer working.

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\* | d0c7e0e Fixed Ghost sheet to have orientations similar to PacManSprite.

\* | f4d78c2 Finished Ghost spritesheet.

\* | 3507015 Fixed resource leak from re-loading the same images without closing their file handles. Now stores loaded images at all times and re-uses their handles.

\* | 245adde Added some more assets. Added Pac Pellets and changed PacDots. Game now tracks number of PacDots on map. Level clear function in place that currently resets the map. Fixed issue with pause function where timers would just stop and never restart. Fixed bad sprite sheet for the wall tiles. Began making ghost sprites.

\* | b74c87a Slightly modified Ghost files in preparation with Map system integration. Modified UIElement to use Consumer and lambda expression, passing itself to the action. Modified PacMan to implement a temporary fix to the issue that it may be possible to race the current direction and alter it before update completes, but warrants further investigation. Modified tiles to be able to check for direction of a given sprite when entering AND exiting for the sake of implementing ghost tiles (which can involve a simple implementation with map loading). Added method to Direction enum to make it simpler to get its reverse direction. Added (partially complete) suggested AI interface. Fixed misc bugs. Simplified some code. Deleted Tile Wrapping interfaces (they're not really needed tbh). Stayed up to 6AM doing this again. Still have homework due at 1PM. Yay.

\* | a7dd962 Merge branch 'dev-Ryan' into dev

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| \* | f5844b2 Add UIElement.java to git directory

\* | | 3b637f9 Merge with dev-Ryan

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| \* | 00c3f12 Add textbox and button support via new UIElement class and a togglePlay API interface to play/pause the game

\* | | 4008dad Replaced usages of obsolete HashTable collection with HashMap. Changed mapTile drawing method to not depend upon an indexed list. Changed map and sprite drawing methods so they use a separate pane all to themselves. Added new API method that calls upon the map to prepare this area.

\* | | ed9f47d Fixed merge error on PacMan.java

\* | | 2d34b7f Resolving merge conflicts

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| \* 90b7f93 Resolved pacman wall strafing glitch

\* | 4697d1a Merge branch 'dev-CMM' into dev

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| \* | 6454919 PacMan sprite was off-center and not displaying properly in-game. Created new sprite.

\* | | 7c93fa4 Fixed resource names

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\* | ae60c3f Fixed issue with sprite arrays throwing errors if an event caused a sprite to be removed by making the arraylist copy itself first and then iterating over the copy instead. Attempted and failed to fix an error in the map traversal system that caused a PacMan that runs into a wall to shift once and then ignore the system entirely.

\* | 08d7d4c Merge branch 'dev' into dev-CMM

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| \* 44e2741 Major engine optimization: - Sprites are now stored in a Hashtable<Sprite,ImageView> instead of separate ArrayLists - Draw functions use Sprite being drawn as index instead of an int - Game.java contains two methods addSprite() and removeSprite() that work alongside the engine to track which sprites are in game at each update

| \* 7037891 Merge branch 'dev' into dev-Ryan

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| \* \ d0a48ef Merge branch 'dev' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev

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| \* \ \ 30a59c4 Merge branch 'dev-CMM' into dev

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\* | | | | 3f6062e Added code that allows checking PacMan has passed the pellet; need addittional code to remove it from canvas; considering additional API function.

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\* | | | d45439e Fixed collision detection so PacMan can't be [Wall]HacKMan.

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|/| |

\* | | 2dd4704 Merge branch 'dev-CMM' into dev

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| \* | | 526f3ba Fixed issue preventing PacMan from stopping movement based on traversion succes.

| \* | | 5542c1d Merge branch 'dev-Ryan' into dev-CMM

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| | \* | 359c9b8 Fixed an issue where the board was spawning PacMAn in a wall.

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| | \* 4011474 Collision detection progress

| | \* e11f76f Resolved pacman movement bug

\* | | 86bd661 Merge branch 'dev' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev

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| \* | 7877ffd Added new Direction enum file that was excluded from previous commit

\* | | 574bb41 Added support for Direction to the map tile, but deleted the class because it didn't get committed at first

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\* | 0254857 Merge branch 'dev' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev

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| \* ad03bfd Change Log: Direction.java: - Contains a new enum Direction {UP,DOWN,LEFT,RIGHT} for key events Pacman.java: - Now uses Direction enum - Pacman now moves along a TileW x TileH grid - Pacman no longer controls whether it can move off screen GameEngine.java - KeyEvents now use Direction enum

| \* 0f7c8cf Merge with dev

\* | 523499a Slight edit to map.

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\* 4e8e8c9 Fixed small bug I accidentally created myself by making the engine load the game later.

\* dd50238 Fixed numerous bugs in the mapping engine. Implemented resource loading for Empty and Wall tiles. Implemented a method for drawing map tiles. Implemented a way for map tiles to get their own coordinates. Added new resource for pack dots (though it's actually the power pellet image). Made wall tiles able to change texture based on their neighboring tiles. Made multiple other misc fixes to the code. Re-generated UML. Worked until 6AM. Again.

\* a5a95f3 Merge branch 'nickBranch' into dev-CMM

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\* | 5c81fd5 Fixed incorrect usage of Map2D. Fixed incorrect coordinate function on Map2DTile.

\* | 8d8f78a Merge branch 'dev' into dev-CMM

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| \* \ 07cf888 Merge branch 'nickBranch' into dev

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| \* \ \ 3829b6b xMerge branch 'dev' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev

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| \* | | | e76859b Merge with nickBranch

\* | | | | 56365eb I don't understand why this wasn't committed in the first place, or why it changed, because I don't remember adding collision code to the program, nor having it be missing from the Sprite class. Commented code out.

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\* | | | 2fdd7bf Adapt Map to the general coordinate system and make it possible for tiles to find their own coordinates. Allows snapping sprites on tiles to their centers.

| | | | \* 6fd5967 Started implementation of scoreboard

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| | | \* b3e1c4f test intanceof

| | |/

| | \* a841f81 Testing out Pacman

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| \* f2d3e30 Working with Nick to add collision detection

| \* e1f6d05 Resolving Nick's changed that had been overriden by an outdated master branch merge

| \* 116a173 Merge branch 'dev' into nickBranch

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\* | 975bdef Merge branch 'dev' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev

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| \* | 48540e9 Added sprite adding/remove public functions to game engine. Replaced pacman sprite sheet with permanent solution

| \* | 9a35507 Pacman.java changed to work with new spritesheet.

\* | | 70f4c9f Merge branch 'dev-CMM' into dev

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| \* | | c4aefac Removed extra tile.

\* | | | 39c6554 Began changing base classes to integrate map into base game classes; added some extra functions into the class.

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\* | | 7bf1fd6 Fixed iteration operation of map structure to stop at the correct point and not go out of range. Added static method to the PacTileEmpty class to generate a board full of just those tiles. Added testing file for the map class to test board generation does not cause an error and produces correctly-connected boards.

\* | | 958cca0 Modified sprite batch generator file. Added pactile sprite to assets and set up the Empty tile to call it.

\* | | 0e98add Added sprite sheets for PacMan and floor tiles.

\* | | e7d3d93 Updated easyUML diagrams present.

\* | | 723b4d7 Altered Sprite class to integrate with the map structure .

\* | | 09fed0b Removed extra tile and committed to dev.

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\* | c227d4b Added usage of the Sprite interface within map structure; implementation complete due to Sprite missing a method at this time.

\* | 65477a1 Merge dev into dev-CMM

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| \* \ b527146 Merge branch 'dev-Ryan' into dev (a 1-line comment was removed)

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| | \* | 2055776 Removed 1-line comment

| \* | | fd81ef1 Merged dev with dev-Ryan

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| | \* | cdad63d Major game engine overhaul: 1. All but GameEngine.java is platform independent for portability 2. All sprites/characters should extend the new Sprite interface 3. The Engine GUI relies on GameEngine.java extending the API interface 4. Game.java and Pacman.java were completely rewritten for cleaner and platform independent structures

| \* | | ec72b82 Update README.md

| \* | | 16318fb Merge with Dev-Ryan

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| | \* | c0dbdb5 Updated public functions for pacman class

\* | | | adc5ab7 T1 Fixed issues with forgotten name change.

\* | | | 07c10d0 T1 Re-wrote existing map structure to use array to store references to tiles and supporting classes to do so. Added some extra properties to map tile classes to assist in drawing the map.

\* | | | 6c8fecd T1 Re-organized method names, generated a sample tile, and created a list of events that the base map will throw.

\* | | | baa2688 Corrected some authoring data.

\* | | | 15e644b Merge branch 'dev-CMM' of https://github.com/rwlarouche/CSC190\_PacmanProject into dev-CMM

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| \* | | | 2817102 T1 Initial structure of map engine created and corresponding UML generated diagrams generated.

| |/ / /

\* | | | d944aa0 Revert "T1 Changed some class features."

\* | | | 189b179 T1 Changed some class features.

\* | | | a9dadb2 T1 Initial structure of map engine created and corresponding UML generated diagrams generated.

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\* | | b930253 Merge origin/dev into dev

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| \* | | 69aa4ca T1 Added UML diagram project and started adding prototypes for map tiles.

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\* | | 0547420 T1 Added UML diagram project and started adding prototypes for map tiles.

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| \* 55769bf PacDot.java

| \* 660d168 Update README.md

| \* db5162d Update README.md

| \* e9d7fe2 more changes

| \* bba6e4b New changes

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\* 984be28 Removed old src

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| \* fcbfb60 Downgraded Java SDK version for compatability and removed sfx from README.

| \* fcbbd3c Add files via upload

| \* 24f44d7 Initial commit

\* 0e829c4 Created engine and game frameworks to build upon for project

\* ed25dec Removed old src files

\* 508a8ae Converted GameEngine and PacMan projects from Eclipse to NetBeans

\* d0e5557 Uploaded initial GameEngine and Pacman projects

\* 50cd907 Updated README.md

\* 5b16305 Initial commit