

PacMan Requirements

SEM Group 25

26th November 2019

Functional

1 Must have :

- a) Authentication using a username and password, via a database.
- b) The score of each play should be recorded in a database.
- c) At the end of each play session, the user should be able to enter his/her name to be saved together with his recorded score.
- d) At the end of each play session, the game should show the top 5 scores that have ever been recorded.
- e) There are four ghosts, each with their own unique movement AI (alike general PacMan games).
- f) There is a PacMan that can be moved using the keyboard.
- g) There are pellets that can be 'eaten' by colliding PacMan with them, giving the player points.
- h) If the last pellet is eaten the game is won, and the play session ends.
- i) If PacMan collides with a ghost, PacMan dies and the play session is ends.
- j) There are walls that neither PacMan nor the ghosts can move into / through.
- k) If Pacman or the ghosts try to move outside the board, wrap around is used, making them move to the other side of the board.

2 Should have :

- a) Multi-levels for PacMan - when you collect all pellets in a level, you go to the next
- b) PacMan mouth animation - when PacMan moves, his mouth opens and closes
- c) Map parser - maps can be read from a txt file
- d) Multiple lives - when PacMan dies, you lose a life, losing all lives means game over

- e) Menu - there is a menu on which you can see high scores and start the game

3 Could have :

- a) There are big pellets PacMan can eat that will allow him to temporarily eat ghosts without dying.
- b) When PacMan is able to eat ghosts, the ghosts turn blue and go into a frightened mode.
- c) Local multiplayer - moving multiple PacMen on the same keyboard
- d) Sounds - sound effects when eating pellets, moving, getting hit, etc.
- e) Background Music - music for every level
- f) Sprite designs - more interesting sprites for PacMan and the ghosts
- g) Fancy animations - the ghosts have moving 'tentacles'
- h) Easy/Hard modes - you can set the mode to easy/hard and different things become easier/harder:
 - You have more/less lives
 - More/Less points
 - More/Less ghosts
 - More/Less pellets
- i) Different types of pellets / bonuses - maybe even powerups
 - An example is a bottle pellet, this switches the movement keys
- j) Easter egg - maybe some easter eggs in certain levels, if you do certain things
- k) 95% test coverage
- l) Achievements - when you do certain difficult things, you get an achievement
- m) Styles - there are different styles that change the look of the game e.g. 'retro'
 - Unlockable - the styles are unlockable when you get certain achievements

4 Won't have :

- a) Social media integration
- b) Setting up profile picture
- c) Chatting with other player
- d) Online multiplayer

- e) Microtransactions

Non - Functional

- a) Use SQL and JDBC driver for the database
- b) Use prepared statements in Java to avoid SQL code-injection vulnerabilities
- c) JavaFX for UI and graphics
- d) Walls, pellets, PacMan and the ghosts can all be drawn using JavaFX.
- e) Keyboard control over PacMan through JavaFX Key Listener
- f) Tests for at least 75% of meaningful (branch) coverage
- g) Implementing a relevant code structure using various Design Patterns
- h) Using Mockito as a testing framework
- i) It runs 30+ fps on a normal laptop