

Desarrollo de Software (ISW)

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Programming 1

Professor

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Name of the project

Ants Drunk

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**Introduction.**

In this project, we are going to make an application where we can to play with ant, It will develop a game in Java that will allow an ant to walk to its ant hill, however, the road will not be easy, tempting lumps of sugar with alcohol and sugar with harmful substances will jeopardize its way home.

On the other hand, the desktop game is going to allow that users can to build the game, for example the users can to choose the quantity of obstacles that want to play, also the users can to select the size of matrix, the rows and columns quantity, the matrix is going to be the road where the ant is going to pass.

The game is going to let us to save the ant status in a txt file, for example inside of txt we are going to have sugar level, alcohol level and quantity of steps. Also of this way the txt is going to have the current matrix and current position of ant inside of matrix.

**Problem description:**

It is intended to make the journey an ant to its anthill in a square area composed of squares (matrix), each of which can hide a clod of sugar or hide nothing at all. Then, when the ant walks to a new square, one of the following situations may happen: the cell can to be empty, the cell can to have sugar, also can to have sugar with alcohol and finally the cell can to have some type of harmful substances.

In this game we are going to work with matrix, OOP and different algorithms for to save the obstacles the random way in the journey of ant, for to save the information inside of txt file, for to show the movements by keyboard. Furthermore is very important to highlight that we are going to develop of game with git hub repository.

**Project Architecture.**

* Game Settings Model (Plane)
  + In this part where we are going to save or get the information about the nickname of user, large and weight of matrix, obstacles quantity set by user, steps quantity made, the better score in the game and ant information.
  + The last attribute above is because through of this way we can review in the UI if the user selected the part where can play with same settings or with the new settings. In this class is only to save or get information, in this part we can’t to create the matrix, only we have the large and weight that we are going to use in other class to build the real matrix as much as UI matrix like logic matrix.
* Game Model (Builder)
* On the other hand, we have the game model that consist in an essential part of game, and this because the program is going to take the large and weight of matrix, quantity of obstacles from game settings model and then with these information is going capable creating the UI matrix of labels, also the logic matrix assembly with different types of obstacles by random way.
* Also exist the possibility that user can to play with same settings the times user wants to play, for this reason this class was created of this way.
* Ant Model (Player)
* In this part, we are going to work with ant attributes for example: life of ant, alcoholism Level that is going to show how much of alcohol have the ant trough of game, current row and current column that means that the class is capable of save what is the cell exactly where the ant is in the moment, quantity of steps that ant make in the game.
* Pass column and pass row with this information we can to avoid the ant try to return of cell that been before, if the ant try to make this event the program is going to capable to notify with one sound at user that can’t to go back, for this reason we have the attribute called sound, when the sound is on the sound is going to display. Furthermore, exist the winner and loser attribute, as their names are we use them to show when the user win or lose.
* Here same we must to let the ant can to move the place where user say by keyboard, for this reason we made two matrixes: first is the road that user can see and the other is the bad ground that program see for to show the movements and set obstacles, the bad ground is developed by numbers.
* When the bad ground matrix shows a -1 is meaning that ant is there in this cell, when we have a 0 is meaning that cell is empty, when exist a 105 is because ant passed for there, when the program finds a 5 is because there is sugar, 10 is the sugar with alcohol and 15 is meaning of passion, with this numbers in the other matrix we are going to show a image depend of case the ant find in the journey.
* On the other hand, the movements of ant is by a little change of image in the matrix that user can see, if user wants to move down, the program increase one row according the current row, then when we want to move up the program subtract a row in the same column. Move right and move left is by current column but remaining for to move left and adding up for to move right.
* Additionally, we have the hip, it’s consist in a process that can to produce a one movement in the ant the random way inside of two matrixes, this hip can to be active if the ant is drunk and If it hits an edge. There is an important thing, if the ant came from left, now it can´t to go back or the random try to move down and the ant come from there the hip avoid cases like this, for this reason the algorithm of hip chose a new space.
* After of all commented previously is time to update the both matrixes and also to increase attributes like steps, life depend of ant have found in the cell, current row and current column, for that in the UI can to show the chances from program.

**Technology Stack:**

In this project was used java language that is let us to develop the software and also was used the Git Hub repository for to save the code of application. These technologies focus in pillars of the project.

Then we used differents aspects that have each mentioned technology for example: in java we worked with OOP, Ui thanks by java swing, and in Git Hub with work with Git.

**What is Java?**

“Java is a programming language and a computer platform commercialized for the first time in 1995 by Sun Microsystems. There are many applications and websites that will not work unless you have Java installed and more are created every day. Java is fast, secure and reliable. From laptops to data centers, from game consoles to super computers, from mobile phones to the Internet, Java is everywhere.”(Java).

**What is Git Hub?**

“GitHub is a Git repository hosting service, but it adds many of its own features. While Git is a command line tool, GitHub provides a Web-based graphical interface. It also provides access control and several collaboration features, such as a wikis and basic task management tools for every project. “(TCCruncOrg)

**What is OOP?**

On the other hand is very important to say “OOP is a design philosophy. It stands for Object Oriented Programming. Object-Oriented Programming (OOP) uses a different set of programming languages than old procedural programming languages (C, Pascal, etc.). Everything in OOP is grouped as self sustainable "objects". Hence, you gain reusability by means of four main object-oriented programming concepts”(Code Project).

**Results**

|  |  |  |
| --- | --- | --- |
| **Aspect** | **Jean Carlo** | **Condition** |
| UI | 100% | Successful process \* |
| OOP | 100% | Successful process \* |
| Game logic | 100% | Successful process \* |
| Build of game | 100% | Successful process \* |
| Settings | 100% | Successful process \* |
| Save settings in txt files | 100% | Successful process \* |
| Written work | 100% | Successful process \* |

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