

011 Element Design and implementation report (2023 MOD003484 TR2 F01CAM)

Brief 2: “The IntelligentCraft Game"

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This is a Java program for a game called IntelligentCraft or AICraft. To run program export zip file and run Main in an IDE or console. I have used Intellij to build this program, so it is recommended to run program using Itellij’s IDE.

There are two routes to take in this program.

1. The first one is the role of the Parent. The parent role can be accessed by logging in or registering a new parent profile using 2 variables instead of the 3 that were in the design. The two variables are the username and password. I did this because I found that the email parameter would not be viable as the java program is not connected to the internet and the parent profile cannot be reset if the user cannot remember their information. The password has special parameters for a strong password which enlist that the password should have at least:

* 1 Uppercase letter
* 1 Number
* 1 Special Symbol
* 8 characters

This password is then further hashed using the SHA-256 to protect the child and information from being easily altered .

* 1. It has been designed based off an admin role in a system where the parent can access the child’s information. The parent can change the child’s PIN in case the child has forgotten their password and view how the child is getting on with the game.
  2. Initially when designing the program in the 010 assignment our group had come up with the idea of Showing this information as a leaderboard of all the children that have played the game, but I found it challenging to make the player list as it never initialized, and it was always empty. Instead, I changed it to prompt the parent to input the child’s name they would want to view the statistics for.
  3. Furthermore in the Parent Menu ,the View children STEM progression method is empty . I excluded the implementation of this because our initial idea was to use a counter to add to the bar and display as percentages whenever a Maths question has been answered correctly . However this became two confusing as the question are all in the same file for the child and are displayed randomly which hinders the ability to decipher what topic the question is based off.
  4. Having said this, The Parent profile works well with the methods that are called and there should not be any issues when running

**Implementation of Parent Design:**

Diagram

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Text

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1. The second role is for the child . The child is the one that plays the AICraft game . The child registers and logs in to play the game. The parameters needed to register are Name , Age and PIN. All parameters have been validated to ensure that realistic and viable information is entered. For the PIN to be registered it needs to be exactly 4 characters and for the age to be registered it has to be within a certain boundary. Once registered this information is saved in a text file that can be retrieved to validate the user later on when logging in. The child profiles are also stored in an Array List to be accessed by the Parent when displaying Menus for the children registered .

After successfully logging in the user is presented an initial menu to either

* + - start a new game ,
    - continue where they left off previously ,
    - view Inventory /Craft
    - Exit game

I decided to change the initial design here as it included an option to view a leaderboard for all the children. As mentioned before I found it challenging to link the child list to the player because the child has been separated into two classes ; the child and the player. I replaced this with a menu option to view the Player’s Statistics. Additionally , I moved the location of this menu to be after the user chooses the menu option Of : View Inventory.

Another change I made was to automatically save the players progress within the game instead of having it as a menu option . I did this because I thought this would improve the overall user experience when playing the game .Apart from this I tried to keep the main premise of our design in the 010 assignment when implementing it in this program.

Apart from all this , I added random number generators to the Areas displayed to the child along with the resources allocated to the area to make the game less repetitive and monotonous. I applied this same concept to the questions asked for the child to answer.

The main idea for the game that the child chooses an area to explore .After choosing the Area ,the user is prompted a random question to be able to gain resources to craft. If answered correctly the child can choose the resource they would want to collect and this will be allocated to the player’s Inventory . This will loop over until the user chooses not to explore any areas. If the question is answered incorrectly , the child is shown hints to the answer . After 3 incorrect answers the child is then shown the answer to the question. This is the logic for the game.

For the crafting side of the game the child uses the resources collected to craft parts of the rocket . The progression of building the rocket is shown after every successful craft as a percentage. A message is displayed once that percentage reaches 100% which means that the rocket has been successfully crafted .After every successful craft the child levels up to be able to access other crafting blueprints which can later be implemented based off the player’s level.

**Implementation of Child Design:**

Diagram, schematic

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Text

Description automatically generatedGraphical user interface, text

Description automatically generated

Here we start by registering as a child and starting a new game as there is no saved progress. This will be saved in the text file and saved to the array list of children.

**Playing game :**

Text

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Description automatically generatedGraphical user interface, text, application

Description automatically generatedGraphical user interface, text

Description automatically generated

Player game progression saved in text files to allow user to reload their progression.

**Crafting Menu**

Text

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Player inventory successfully updated by comparing the required resources to the player inventory and subtracting the resources used.

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