SCRAP SALVAGE GAME

DAT 602 Assessment project

Abstract

A summary of planned screens and menus for scrap salvager game to be built for DAT602 assessment.

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Brief Description

The player clicks tiles to move around – when the player moves onto a square with an item on it, they can pick the item up. Most items are “Scrap” that can be converted to materials.

The player can use the materials to craft machines or parts, and may sell machines or parts or scrap to an NPC market place, and use the funds to buy different materials or other supplies.

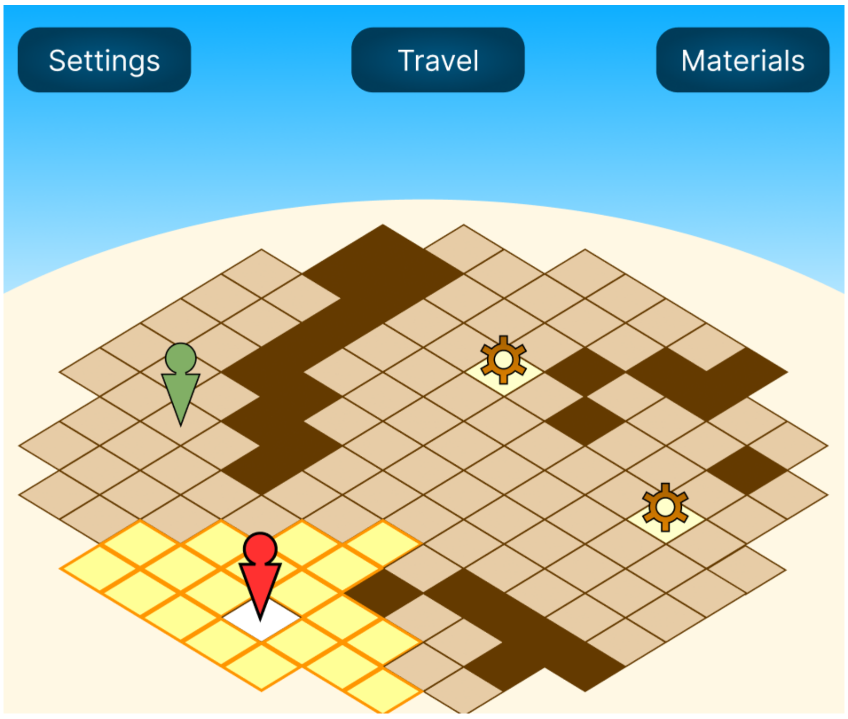
Main screens

Login Screen

Player selects their account, enters a password.

If the player enters both their account name and password correctly, they see a list of the characters they can log into the game as.

Outdoor Zone



An interactive screen that allows the player to navigate around a “zone”.

The grid, and all visual assets are placeholders now, and are subject to change.

The “sky” part of the map is intended to be an aesthetically pleasing way of reserving a certain amount of screen space for UI elements.

Impassable dark tiles may be either built into the map. The player can not move onto these, but may move around them, and with the required powerups, might be able to “hop” over them.

An icon representing the player is displayed on the map, and tiles that the player is able to move to are highlighted visually. (A red arrow with a circular head is here being used to represent the player.)

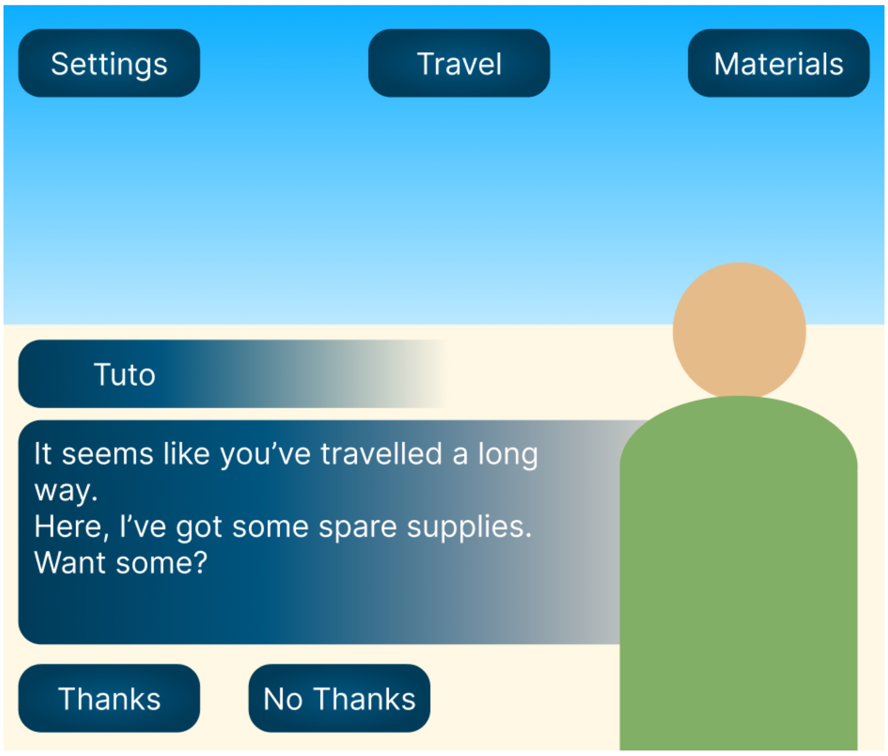
When the player has moved, it ends the player’s turn, and any entities controlled by the system can move.

The player can move to a “legal” square by clicking on it.

In the example, a system entity (NPC) is represented by a green arrow with a round head. The player may interact with an NPC by moving to an adjacent tile, and the NPC may interact with a player by moving to them.

Items that can be picked up are displayed on the map as well (represented in the example by “cogwheel” images) – the player or an NPC can pick an item up by moving to an item square.

NPC interaction



It seems like you’ve travelled a long way.
Here, I’ve got some spare supplies.
Want some?

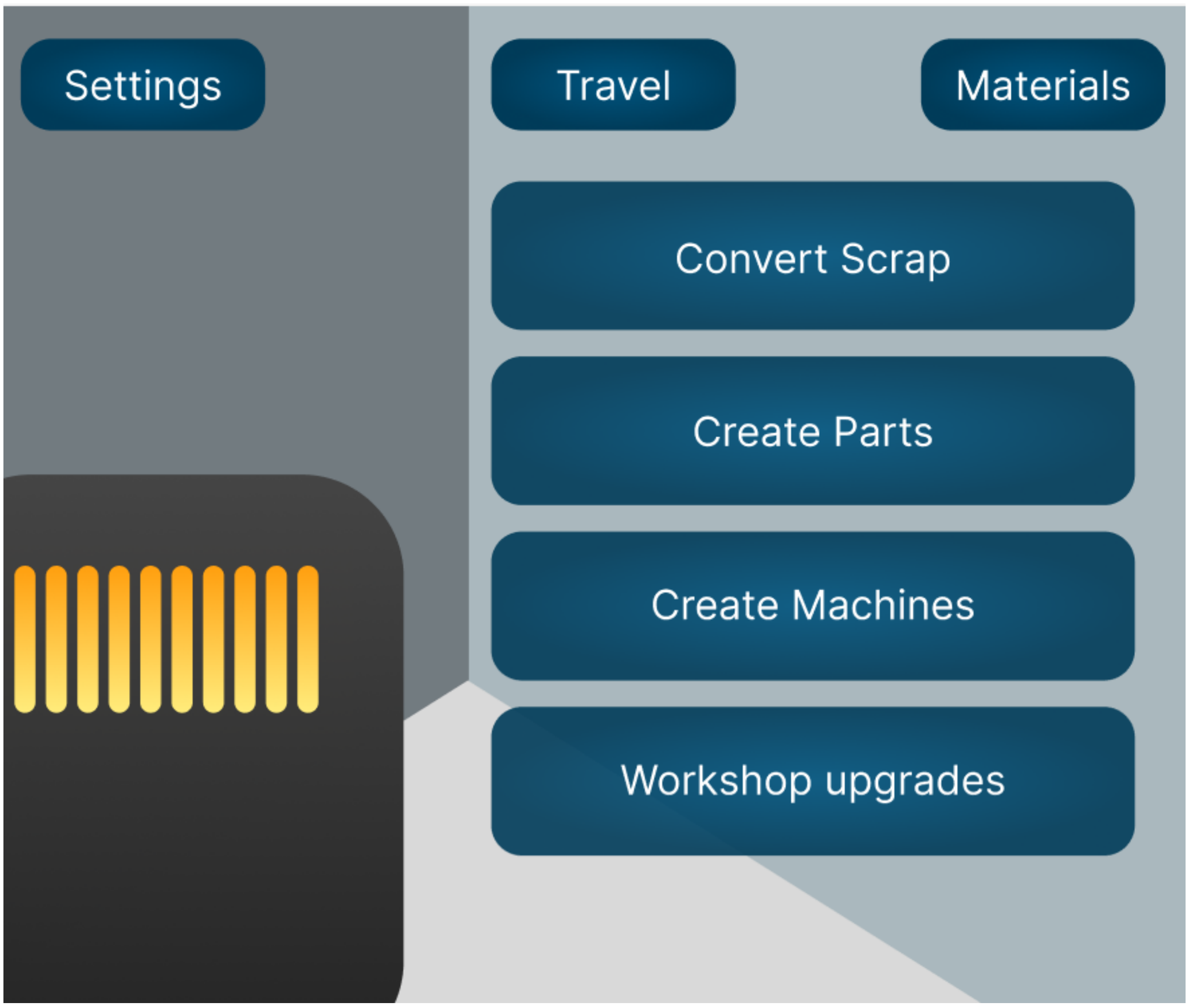
While interacting with an NPC, the NPC portrait should appear, and the NPC’s name should appear above their dialogue box.

Buttons below the dialogue box give the players options to respond.

A player's dialogue options may have different effects depending on the interaction – for example, in this interaction, the NPC "Tuto" might give the player some resources if the player says "Thanks".

Each NPC might have a table of potential interactions, including NPC dialogue, available player replies, and the different things that might happen if a player selects a particular option. (For example, the player may gain or lose resources, currency, or NPC friendship value, or gain an item)

Workshop Zone



The workshop allows the player to create things from materials that they can obtain by gathering, by trading with NPCs or by

Travel Menu

A Menu that will allow the player to travel from their current location to another location – for example, from the workshop to the outdoor zone.

Settings Menu

Adjust things like window colour (Dark mode vs light mode?) difficulty

Materials menu

A list of all the materials the player currently possesses, including scrap, machine parts, complete machines, and tools. (Menu name should possibly be changed to reflect this)

Relational Database Tables

See scrap-salvager-game-diagram.pdf for a relational diagram.

Player

Every account that can play the game is a “player”.

playerID: Primary key – unique, integer, not null. Serves as a unique identifier within the database and can’t be altered.

username: unique, varchar, not null – the account’s human-readable identifier for the player, and as such, is a compulsary field that must be unique.

password: varchar, not null. Is used to verify each user. It’s best never to store a password in plaintext, so the actual stored value will be hashed.

Character

This table represents a player character in the game

characterID: Primary key – unique, integer, not null. Serves as a unique identifier for each character within the database and as such, can’t be altered.

name: The character’s name. Displayed in dialogue and parts of the user interface.

playerID: The unique identifier of the character’s owner – a foreign key linking the Character table to the database’s Player table.

mapID: The unique identifier of the map the character is currently on – this indicates the zone the character is in

currency: How much in-game currency the player is holding right now. Updated if the player purchases or sells an item.

xPosition: The x-coordinate of the player’s current location in the current zone. If the current map has no dimensions, the value will be set to zero.

yPosition: The y-coordinate of the player’s current location in the current zone. If the current map has no dimensions, the value will be set to zero.

xPosition and yPosition will be used jointly to determine where the character is on the map represented by **mapID**, and where the character can and cannot move to. This will be done by checking the map dimensions, **height** and **width** and the positions of other entities that have a relationship with the map the character is on.

MapType

This table serves as a template which pulls some default and reusable data for maps.

mapTypeID: Primary key, represents the map type itself.

name: The name of the map type. This could be, for example, the name of a biome like rainforest, tundra, or desert.

defaultTile:

Map

mapID: Primary key – unique, integer, not null. Serves as a unique identifier within the database and can't be altered.

name: The name of the map. This will be shown in the UI

mapTypeID: Foreign key linking to

height: the height of the map. Characters, NPCs, and tiles cannot legally move beyond the map boundary, so the **xPosition** should not be greater than the map height.

width: the width of the map. Characters, NPCs and tiles cannot legally move beyond the map boundary, so the **yPosition** of any character, NPC, or tile should be less than the map width.

The height and width cannot be null, but maps whose MapType has a hasGrid value of false will have their height and width set to zero.

Tile

Tiles are static entities that are placed on the map and cannot move

tileID: Primary key – unique, integer, not null. Serves as a unique identifier within the database and can't be altered.

name: The name of the tile in a human-readable format. Not shown in the UI, it's just to make queries a little easier.

passibility: [TODO: Think of a better name] the property of a tile that determines how the tile affects the movement of a character or NPC. For example, deep mud might slow a player down – a deep hole might be able to be jumped over, but a character or NPC cannot stop while in the middle of moving over one, and a character or NPC may be unable to move over a tall wall.

image: The image displayed in a tile's location.

Tile_Map

This is a singular instance of a tile on a map.

mapID: Joint primary key AND foreign key used to connect this entry to an entry on the Map table.

tileID: Joint primary key AND foreign key used to connect this entry to an entry on the Tile table, used to access the properties of the tile, such as

xCoordinate: the x position of the tile on the map.

yCoordinate: the y position of the tile on the map.

[TODO: Two tiles cannot occupy the same x position if they also share a y position – is there a way to enforce this using database rules?]

Item

itemID: The primary key, unique not null. You get the idea, it's a primary key.

name: The name of the item – shown on the in-game UI

category: The category that the item falls into – might be used for item sorting, such as crafting materials, survival items. As well as QoL purposes, that might affect NPC interactions/trade offers. See the "Behavior" entry under the NPC table.

description: Description of the item that may appear when examining an item in the UI.

value: The value of the item – the basic amount of in-game currency that it would normally be worth, either when purchasing or selling the item. While NPCs might make trade offers that value items higher or lower than their actual value, this will always be derived from the database value.

icon: An icon representing the item. This may be displayed in the UI, and will be displayed when an item is physically present on the map.

NPC

npcID: Primary key

name: The name of an NPC

behavior: A trait that influences this NPCs behaviour [TODO: would this be better with its own reference table so that behavioural traits could be defined more precisely and possibly even joined with other tables?] For example, an NPC with the behavior "Avaricious" might offer low prices on items and sell them higher, and seek out the highest value items that appear on the map – an NPC with the behavior "Hungry" might offer generous trades that favor a character that offers items in the "Food" category, and seek out Food Category items first if they appear on the map.

currency: The amount of currency an NPC is carrying. They cannot offer more than the currency they are holding when trading with a player.

mapID: Foreign key of the current map the NPC is on. May be null, as there may be times when not every NPC is present on a map.

portrait: Portrait of an NPC that shows when the player is interacting with an NPC

sprite: Smaller image of the NPC as they appear on the map.

xPosition: The x position of the NPC on the map. Used to calculate NPC movement.

yPosition: The y position of the NPC on the map. Used in conjunction with the x coordinate in conjunction with the y coordinate to calculate legal NPC movement.

[TODO: think about how to model potential NPC-player interactions]

Character_NPC

This table is used to track the relationship between a character and an NPC – in other words, how much each NPC likes each character.

npcID: Foreign key and joint primary key

characterID: Foreign key and joint primary key

amicability: How well the character and NPC get along.

Character_Item

This is a join table used to track the relationship between player characters and items. The aggregate of all entries in this table with a single characterID represent the total inventory of that specific character.

characterID: Foreign key and joint primary key – identifies the character holding the item.

itemID: Foreign key and joint primary key – identifies the item being held

quantity: The quantity of the item being held

NPC_Item

Represents the cumulative inventory of every non-player character.

npcID: Joint Primary key and foreign key that identifies the NPC carrying an item

itemID: Joint Primary key and foreign key that identifies the item an NPC is carrying.

quantity: the number of this item that the specified NPC is carrying

Recipe

The Recipe table represents the items used to craft other items. As both the item crafted AND the ingredients used to craft them are "items", both foreign keys connect to the Item table and represent an **itemID** – they have just been given distinct names as to be unambiguous.

itemCraftedID: Joint Primary key and foreign key. Linked to itemID in the item table – represents the item that will be crafted if the recipe is made.

ingredientID: Joint Primary key and foreign key. Represents an ingredient in the recipe.

quantity: the quantity of the ingredient needed to craft the item being crafted

CRUD Events

[Write stuff here]