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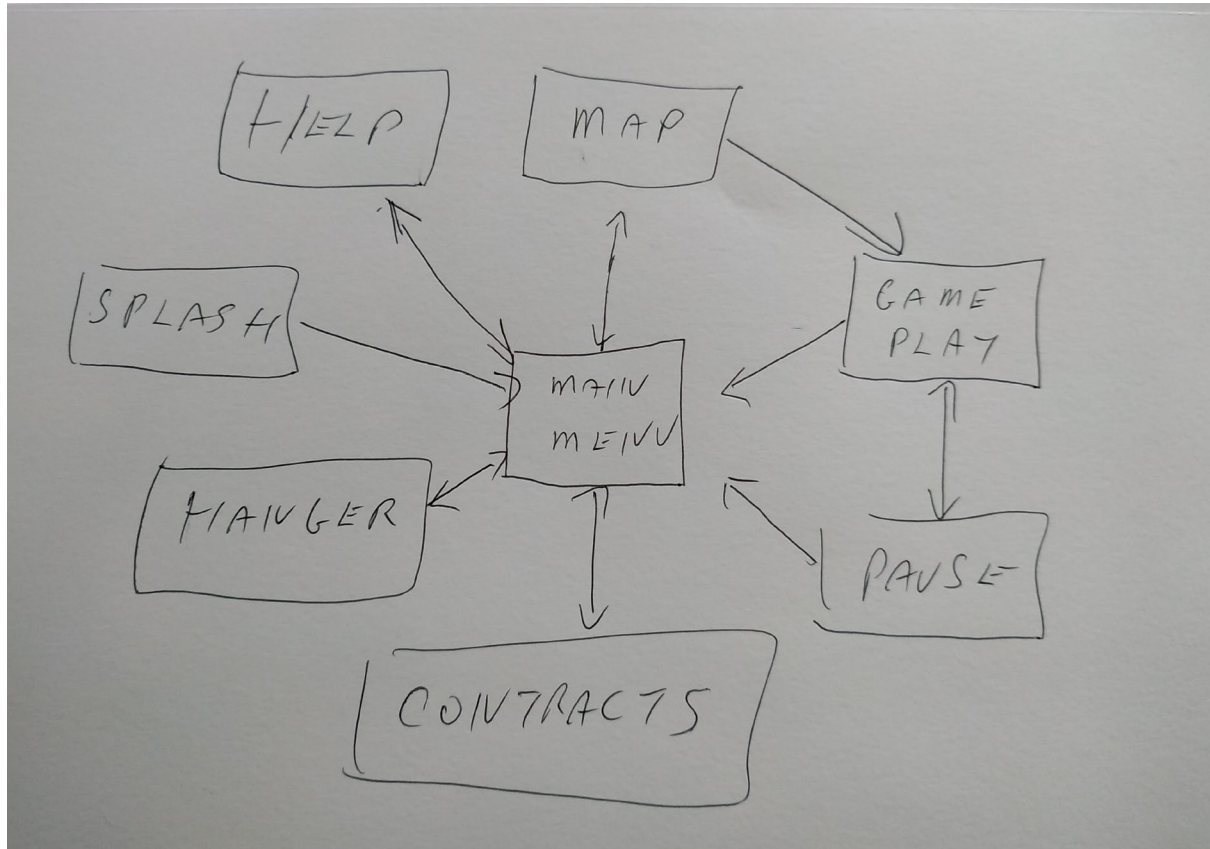
## Title Page

Asteroids

Version 1.0

## Screen Layout & Interaction

Screen flow diagram [PL 100%]



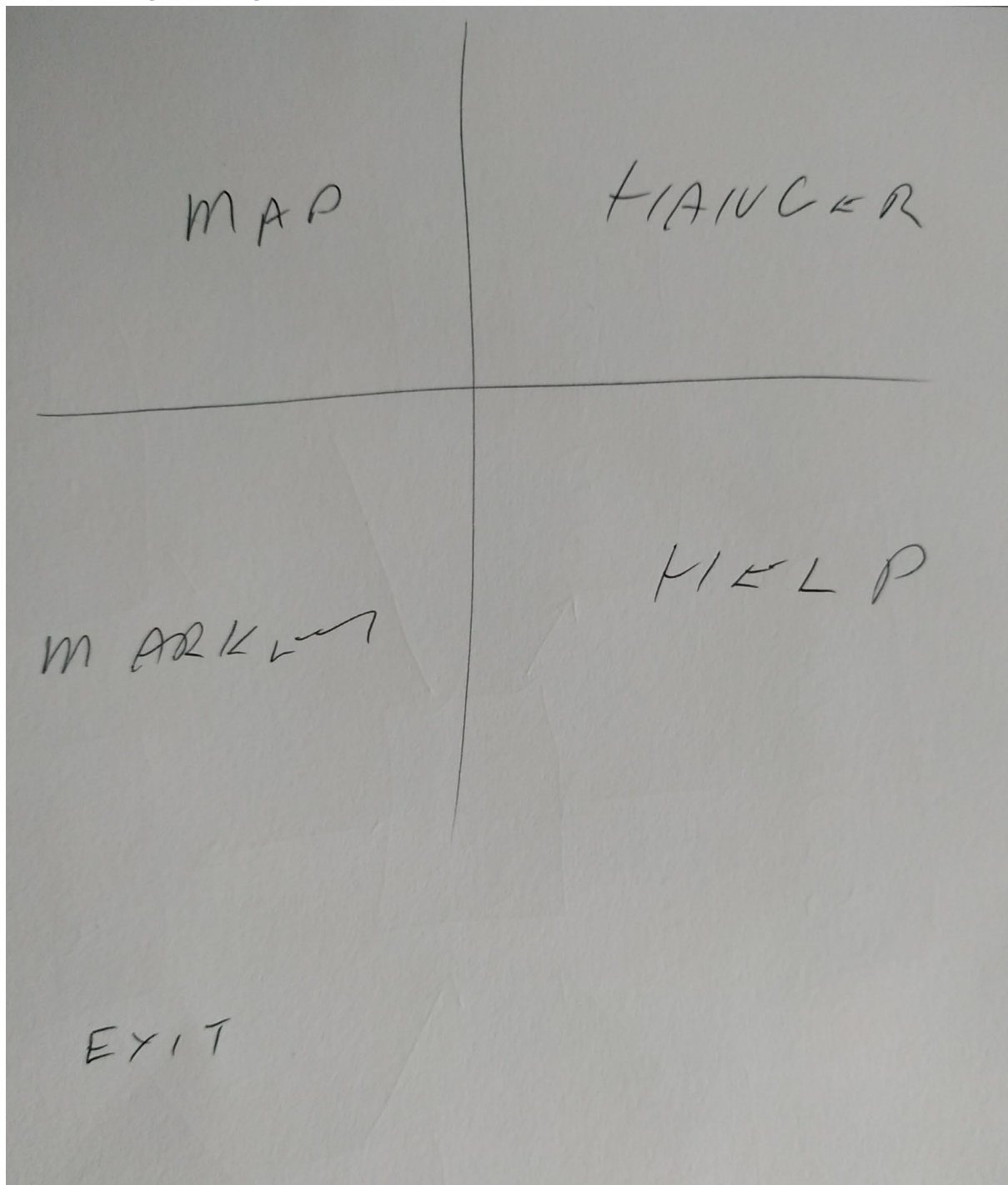
### Splash Screen[PL 100%]

The image will be displayed until the player presses any key or clicks the mouse the game will move to the main menu page/screen.

Mouse click goto main menu

Anykey goto main menu.

## Main Menu [PL 100%]

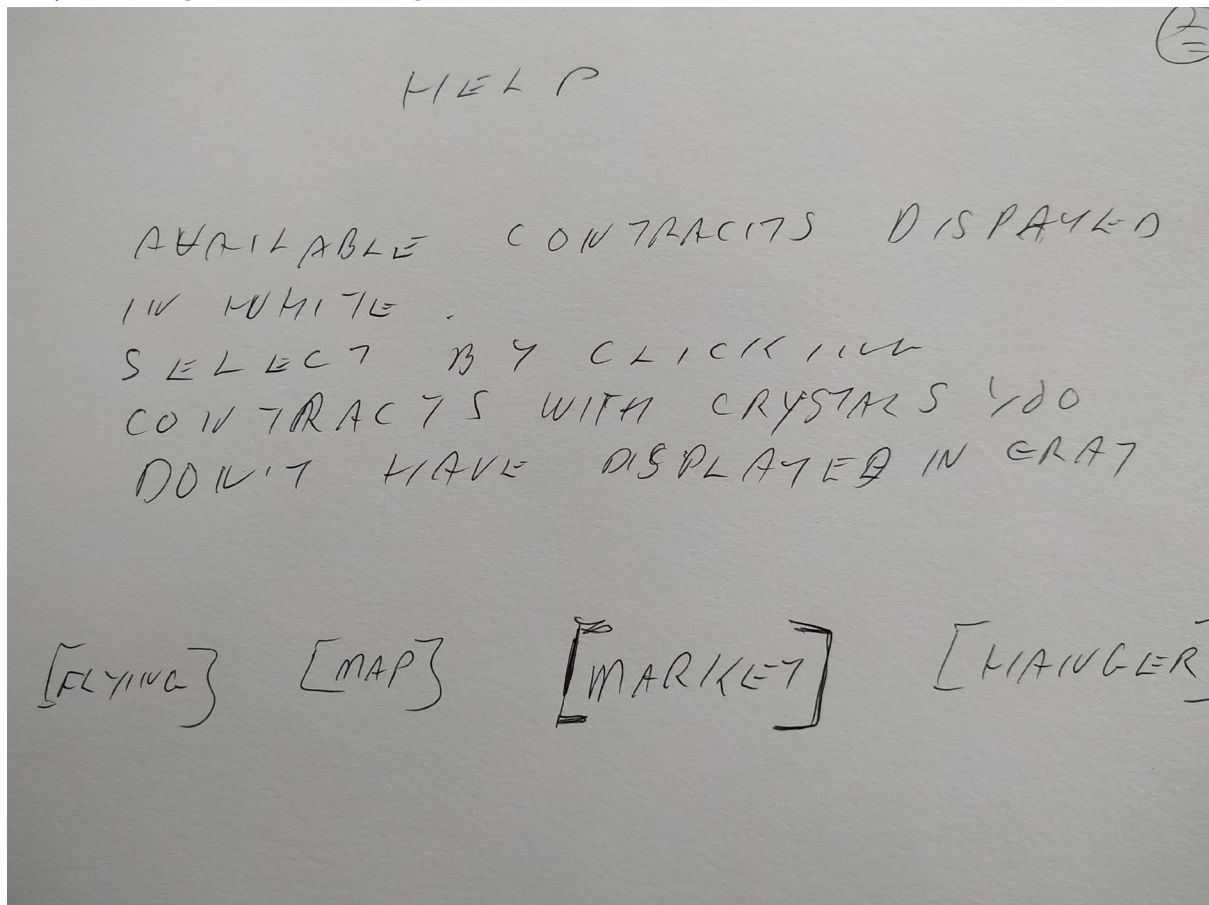


The screen top two thirds of the screen will be divided into four sections (invisible).

When the user moves the mouse into a section the text will be displayed in yellow, when the mouse moves out the text will return to white.

If the user clicks down on the mouse button the corresponding screen will be activated

There will an exit button on the bottom of the screen with a hit box a bit bigger than the text, clicking on this will exit the game.



The help screen will be divided into four tabs [flying, map, market, hanger] with the tabs labels at the bottom of the screen, each tab will display a different piece of text.

Clicking on the tab will bring up the corresponding text on the help page.

In the top right corner will a small icon for returning to the main menu.

Clicking on this returns to the main menu

### **Flying text**

Use arrow keys to fly ship.

<ctrl> to fire laser.

<Alt> to hyperspace.

<esc> to return to base.

Shoot asteroids to find crystals

Use tractor beam to collect.

Shoot Pirate to get scrap metal.

Fulfill contracts to earn Space Credits.

Upgrade ship to progress.

### **Map text**

Use mouse to select a Planet or moon.

View crystal data.

Expected Pirate activity.

Click to explore.

To unlock new planets successfully complete a mission to the previous planet.

**Hanger text**

Use mouse to select by clicking a part of the ship to upgrade.

Current level displayed in white.

Cost in metal and credits

Grayed out entries currently unavailable

Lasers effects fire rate.

Engine effects acceleration.

Reactor effects fuel level.

Hold effects turning rate.

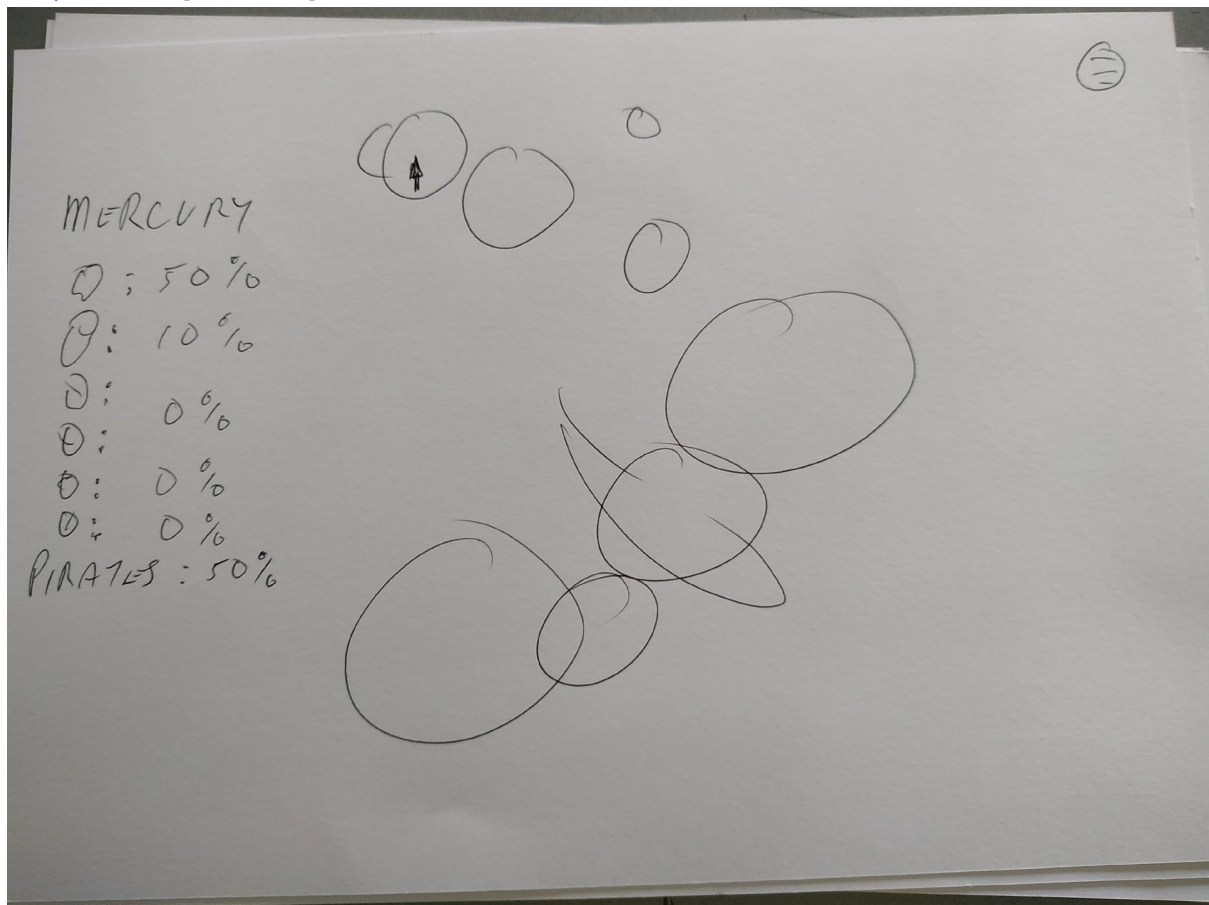
**Market text**

Available contracts displayed in white.

Select by clicking

Credits added to your balance

Contracts with crystals you don't have displayed in gray



Display map of solar system with all planets arranged in an arc. When mouse is over a planet display the details for that planet on the left hand side of screen. Planets that can be visited are displayed in colour and their details in yellow text. Locked planets are displayed in grayscale and their details in white.



### Data for planets

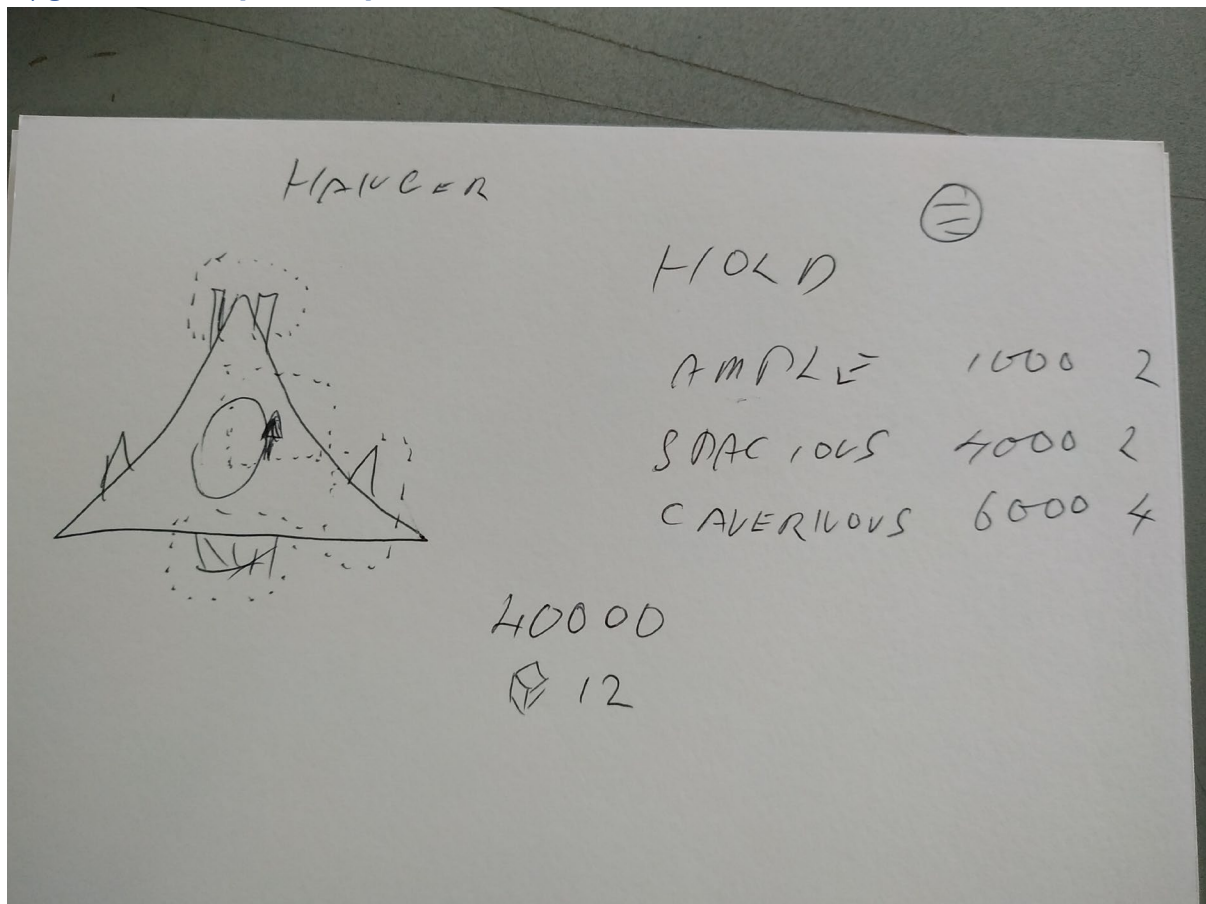
	amber	red	purple	green	blue	pirates
moon	0%	10%	10%	0%	0%	90%
venus	20%	20%	0%	0%	0%	10%
mercury	50%	10%	0%	0%	0%	50%
earth	15%	15%	15%	40%	0%	20%
mars	10%	80%	0%	0%	0%	30%
jupiter	10%	10%	10%	10%	10%	40%
saturn	20%	20%	20%	20%	20%	80%
neptune	10%	0%	0%	40%	50%	90%
uranus	0%	0%	0%	20%	50%	40%

These are the probabilities that an asteroid contains a crystal of the corresponding colour and at the end of the chance of a pirate ship showing up.

In the top right corner will a small icon for returning to the main menu.

Clicking on this returns to the main menu

### Upgrade Screen [PL 100%]



A large picture of the space ship will be displayed with cutouts (internal components visible when the mouse moves over that section). The current option and other available options will be displayed with their associated cost on the right side of the screen, options available to purchase will be displayed in yellow with their price in credits and metal. Upgrades

unavailable (price) will be displayed in gray. The current option will be displayed in white without any price.

The current balance of credits and metal will be displayed.

Clicking on the exposed ship part will offer the user the option to confirm purchase by pressing the return key. Funds and metal will immediately be removed from the players balance.

Data for upgrades

"Engine" { "Diesel" 1000 [2], "Turbo" 2000 [2], "Super Charged" 3000 [4]}

"Laser" { "Neon" 1000 [2], "Green" 2000 [2], "Death Ray" 5000 [4]}

"Hold" { "Ample" 1000 [2], "Spacious" 4000 [2], "Cavernous" 8000 [4]}

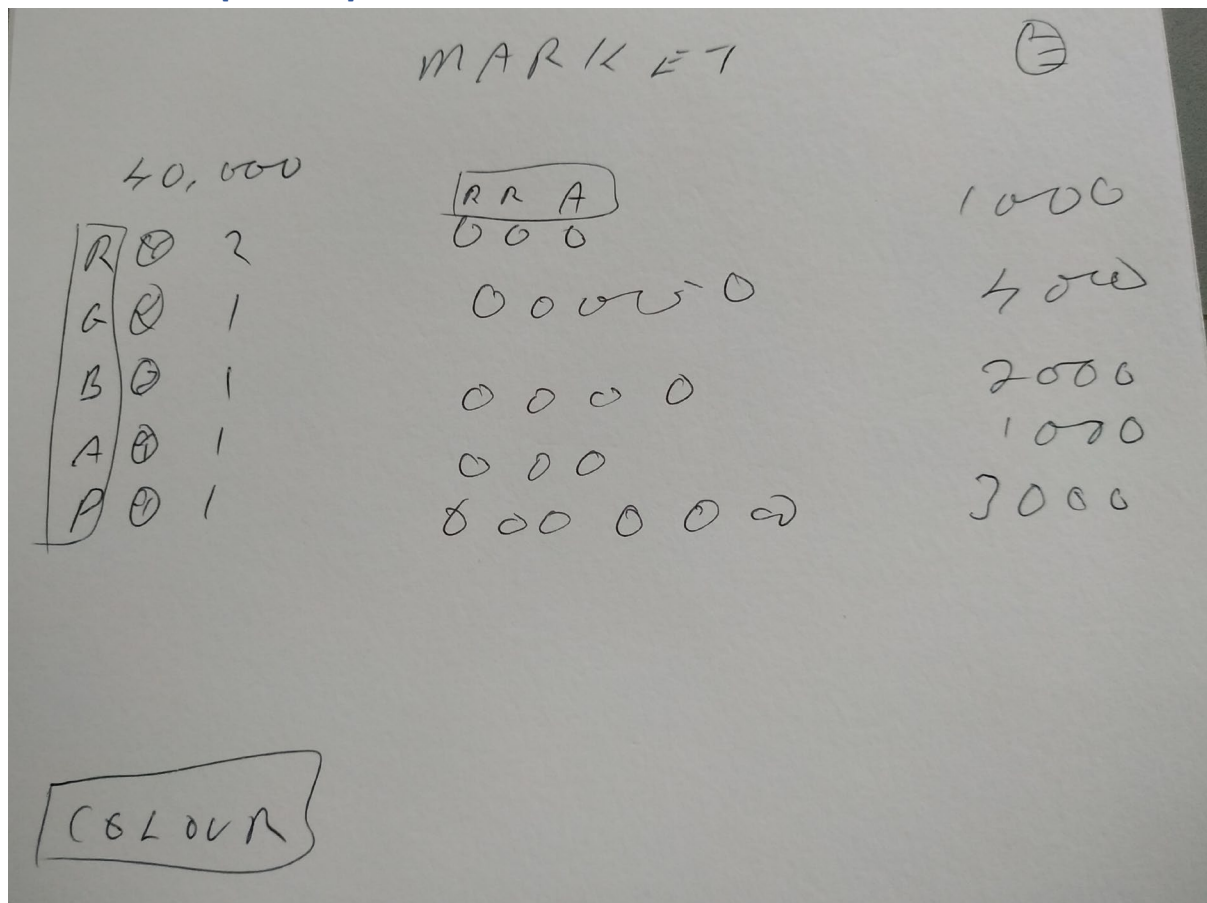
"Reactor" { "Fission" 1000 [2], "Fusion" 4000 [2], "Cold Fusion" 9000 [4]}

Upgrades affect parameters for control of spaceship

In the top right corner will a small icon for returning to the main menu.

Clicking on this returns to the main menu

### Market Screen [PL 100%]



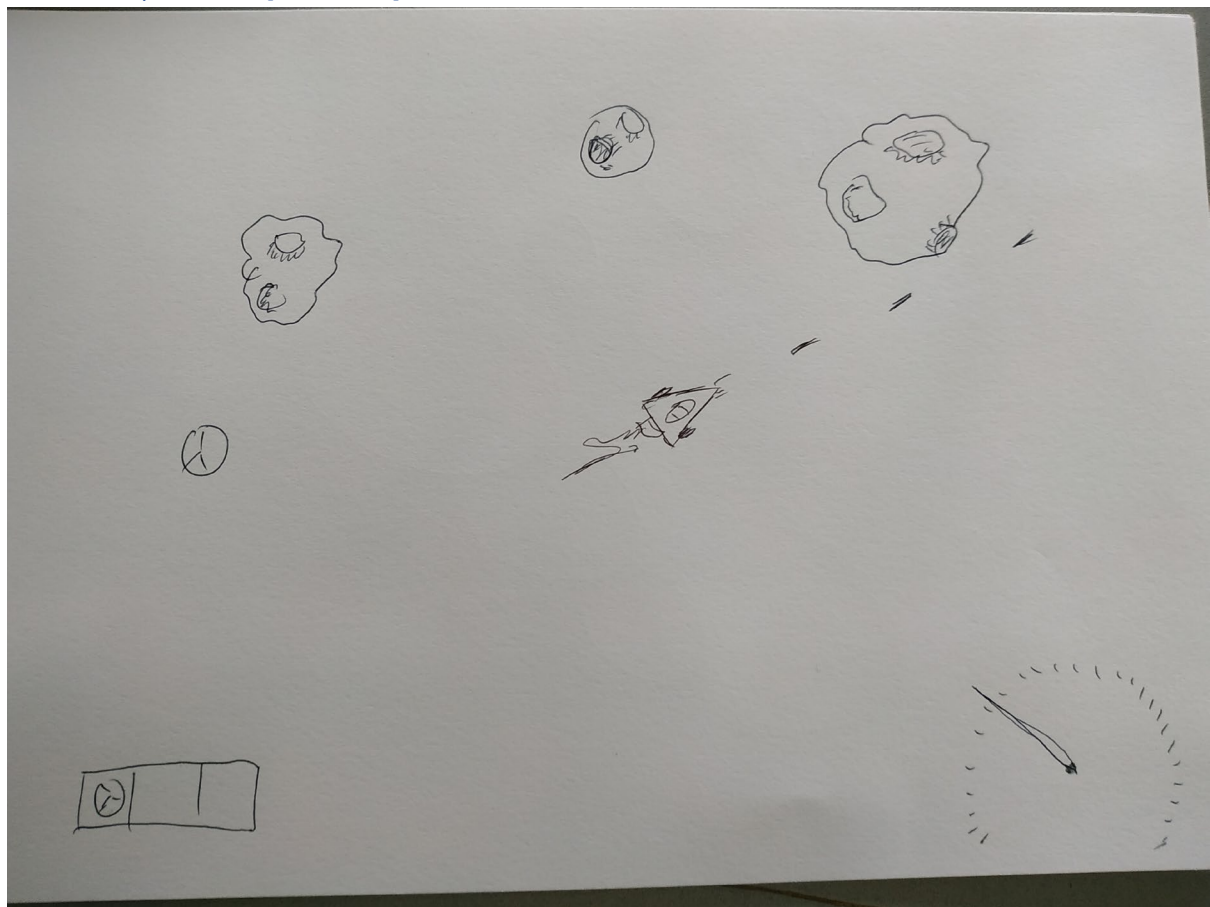
Display the next five contracts as a set of crystals and a credit amount in white if you fulfill the contract or in gray if don't have enough. Display the current credit balance and the current collection of crystals on the left of the screen omitting any colour you don't have any of. If you move the mouse over the contract the amount turns yellow and if you click when the contract is yellow the contract is fulfilled and that amount of credits added to your total and the corresponding crystals removed from your store.

The game will have 100 contracts with random variations between ten basic contract type of varying value.



In the top right corner will a small icon for returning to the main menu.  
Clicking on this returns to the main menu

## Game Play Screen [PL 100%]



The gameplay screen will display the ships current location and orientation. The current location of all asteroids, the enemy ship[s] and their orientation. Any bullets their location and orientation. The location of any exposed crystals or metal scraps. The capacity and contents of the ships hold, the amount of fuel remaining. The current status of the shield will be displayed.

User input will control the ship with these keys bring held down

- <up arrow> or <w> turning on the engine
- <left arrow> or <A> rotating the ship anticlockwise,
- <right arrow> or <D> rotating the ship clockwise
- <ctrl> firing a laser blast, play fire sound
- <alt> to activate a hyperspace jump
- <space> to activate the shield
- <esc> to goto pause menu

The current fuel level will be displayed as a gauge with an arc of notches and needle, the needle rotates to indicate the current fuel remaining and the colour of the notches change colour also with green being full and red being empty.

When a laser blast (bullet) hits an asteroid and it breaks up a dust cloud animation should be run at that point with the accompanying sound effect.

When a laser blast hits an enemy ship an explosion animation should be run at that point with the accompanying sound effect.

When an asteroid is destroyed and contains a crystal the crystal should be displayed at the aster

### Pause Screen [PL 100%]

The pause screen will display a two option menu in front a stationary game play screen. The options to “resume game” or “return to base” will be displayed in white and turn yellow when the user move the mouse over the text. A mouse release will activate the menu option.

Resume game will continue the current gameplay session and return to base will go back the main menu adding any crystals in the hold to the user’s supply.

## Game Systems

### Shooting [PL 100%]

The laser canon is located at the nose of the ship and laser blasts launch from that point and have the same bearing as the ship when launched. The fire rate is controlled by the ship laser level.

- Normal 3 blasts per second
- Neon 4 blasts per second
- Green 6 blasts per second
- Death Ray 12 blasts per second

The laser does not use any fuel. The laser blasts travel at 300 pixels per second and run for 3 seconds wrapping around the screen.

When the blast collides with an asteroid or an enemy ship the asteroid is reduced in size or the ship destroyed and the blast destroyed.

The pirate ship will fire laser blasts that will destroy our ship if they hit it but won't damage asteroids or them selves. The enemy blasts will also travel at 300 pixels per second and live for 3 seconds.

### Movement [PL 100%]

The ship will have a velocity and slow down via friction very slowly. Holding <left> will rotate ship a little clockwise, <right> counter-clockwise, holding <up> will accelerate along the heading of the ship.

### Hyperspace jump[PL 100%]

Pressing the <alt> key will activate a hyperspace jump removing the ship from it's current location and reappear one second later at a random location. The hyperspace jump uses 100 unit of shield energy.

### Shields[PL 100%]

Holding space down activates the shield which will be displayed as an animated circle around the ship and will protect the ship from asteroid collisions and enemy fire.

The player starts each mission with

- Normal 300 units of shield energy.
- Fission 600 units of shield energy.
- Fusion 900 units of shield energy.
- Cold Fusion 1200 units of shield energy.

Shield energy is not recovered during a mission. When all shield energy is used up the shield will not activate. When shield energy is less than 100 hyperspace jumping is not available.

### Asteroids[PL 100%]

There will be 4 different sizes of asteroids. The asteroids will be created at the start of the mission with random locations and velocities up to 240 pixels per second. When the asteroid is fully off screen it will be warped to the far side of the screen with the same velocity.

If a laser hits an asteroid the asteroid will break into smaller asteroids. With velocities proportional to the momentum of the incoming blast and the asteroid itself. This will only be an approximation and use real physics.

When an asteroid is hit in it's smallest form a check will be made against the crystal probabilities for that planet and crystal randomly created or not.

The asteroid will have a random spin rate of up to 18 degrees per second. This has no effect on game play.

### Contracts [PL 100%]

Generate 100 contracts with a bit of variety / randomness. The marketplace allows the user to trade in crystals to gain credits. When a users collection of crystals contains the required crystals for one of the next five contracts allow the user to complete the contract and remove the contract from the system. Add the value of the contract to the user's balance and deduct the required crystals from the user's collection.

### Upgrades [PL 100%]

The ship has four Properties that are configurable and each has four values.

The hold can contain 3 , 5, 7, 10 crystals/ metal

The turning rate is has values of 6 degrees , 10 degrees, 14 degrees and 20 degrees.

The engine thrust has values of 2 , 4, 9, 16

The fire rate has values of 3,4,6,12 bullets per second

The shield starting energy has values of 300, 600, 900, 1200

The user can spend their earned credits and collected metal to purchase upgrades which are then permanently applied to their ship.

### Level unlocking[PL 100%]

When you visit a planet and destroy all the asteroids and return to base it unlock the next planet in the solar system. When on the map screen locked planets are displayed in gray scale and the popup information for the planet is displayed in white. Unlocked planets are displayed in colour on the map and the popup information is displayed in yellow on the screen. The difficulty for the levels is managed by starting each planet with a number of asteroids that matches it's order from the sun with a minimum of 2.

### Enemy AI [PL 100%]

The enemy AI just randomly turns on the engine [random duration] and rotates [random amount] or fires [random number of times]. The behavior is erratic rather than hunting the player.

## Game Assets

### Audio assets [PL 100%]

- Menu music
- Gameplay background music
- Engine thrust SFX
- Laser fire SFX
- Asteroid breakup SFX
- Asteroid explode SFX
- Enemy ship fire SFX
- Enemy ship explode SFX
- Enemy ship damage SFX
- Enemy ship thrust SFX
- Ship take damage SFX
- Shields activate SFX
- Shield deactivate SFX
- Shield low power SFX
- Collect crystal sound (colour) SFX
- Hold full error SFX
- Low fuel SFX
- No fuel SFX
- No thrust no fuel SFX
- Hyperspace jump / arrive SFX
- Menu select SFX
- Menu unselect SFX
- Menu activate SFX
- Screen return SFX
- Upgrade Select SFX
- Upgrade confirmation SFX
- Insufficient funds SFX
- Planet select SFX
- Planet hover SFX
- Invalid planet select SFX
- Invalid planet hover SFX

### Art Assets [PL 100%]

- Asteroid small, medium, large, extra large
- Bullet / laser burst
- Explosion animation
- Dust cloud animation
- Enemy ship[s]
- Crystals 5 colours
- Metal junk crate
- Splash image
- Planet arc image



- Individual planets
- Shield ring animation
- My ship
- Upgrade ship with cut out sections
- Fuel gauge
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