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Final Project Documentation

How To Play:

To play a game of System-17C, you would normally start by using your browser to navigate to http://3.82.165.49/ . Unfortunately, we are unable to host the website at all times, so we have uploaded a demonstration of the game on our Github at the following link: https://github.com/TomCassey42/System17c . This video will include our team playing the game and explaining many of its core features.

Game Setting

System-17C is an online multiplayer strategy game set in a large solar system with a single star and 94 orbiting planets. In this system, you take control of one of three ships with the goal of building a Dyson Sphere around the central star. To achieve this end you will need to travel around the solar system and settle planets to begin producing resources. These planets can produce the necessary income to satisfy your solar ambitions and fund the construction of your megastructure, the Dyson Sphere.

Navbar

In System-17C the navbar at the top of the screen is going to be your primary way to manage the game and all of your resources. As you can see in the figure above, the top left corner of the navbar is home to the "Reset Game" button. This button can be used to reset the game at any point; be it the end of the game or mid-game. Next to the "Reset Game" button, you will find the player drop-down menu. This menu allows you to choose from one of three players which each correspond to one of the ships on your screen. After selecting your player, you can look to the right side of the navbar. The first box you will notice is labeled "Credits"; this box lets you know how much money your current player has. As we will discuss later, these credits will be crucial to purchasing planets and upgrading the Dyson Sphere. Next to the "Credits" box you will find the "Production" box. This box denotes the production rate of the planet you are currently orbiting. Once this planet is purchased, the value in the production box will get added to your credits at timed intervals. The next box is the "P-cost" box which tells you the cost of the planet you are orbiting. To the right you will then find the "Dyson" box and the "D-cost" box which note the current Dyson Sphere level and the cost of the next Dyson Sphere upgrade respectively. Both of these game features will be elaborated on in the Dyson Sphere Section.

Figure 1. System-17C Navbar, allowing browser interaction and listing player resources.

| Reset Game | Player 1 | System-17C | Credits | 35694 | Production | 4 | P-Cost | 41 | Dyson | 3 | D-cost | 3798 |

Player Movement

One of our team's favorite game features during the development of this project was the movement system. As you may notice from viewing the game map in Figure 2, System-17C is made up of 5 rings of planets, and because of this, we decided to implement a radial movement system. Once you have selected your player using the drop down menu, you can begin moving by using the arrow keys. The right arrow key will move your ship clockwise around its current ring, whereas the left will navigate counterclockwise around the ring. The down key will move the ship inward to the next ring and the up key will move the ship outward. Using this system. You can navigate the solar system with rapid speed and relative ease.
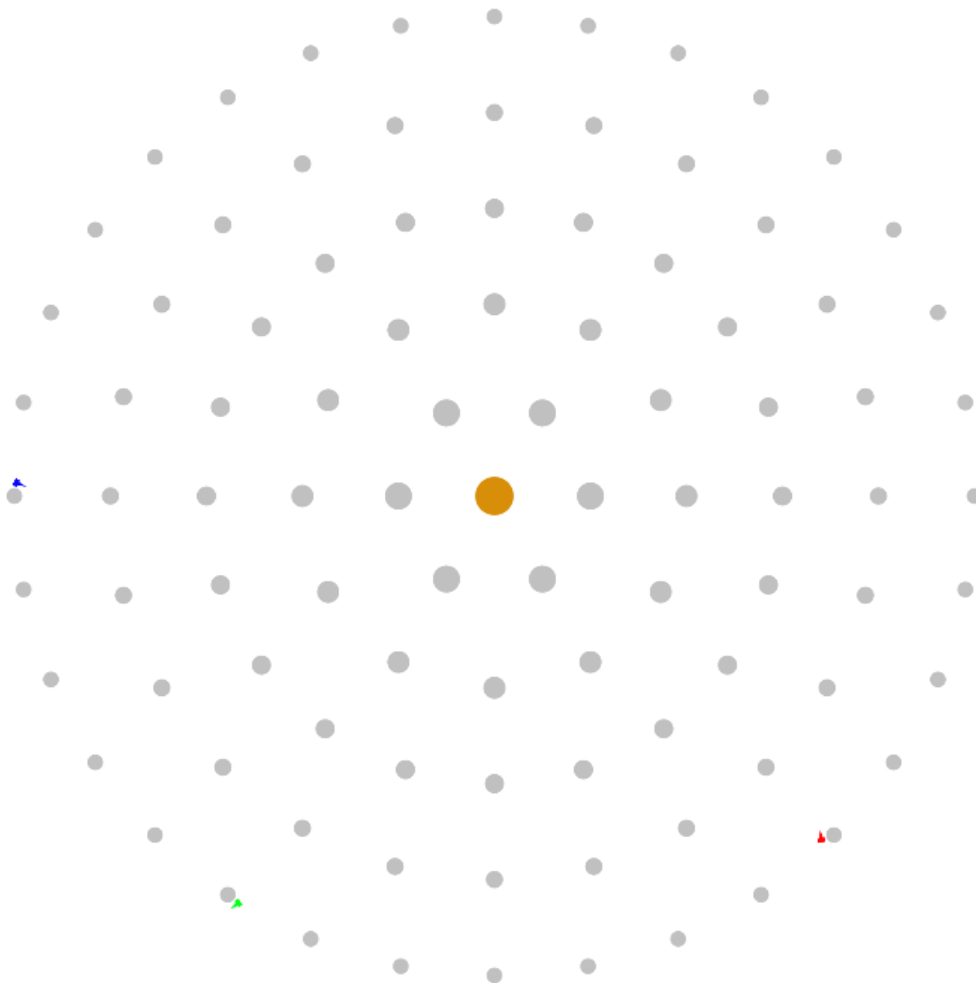
Figure 2. System-17C Map. Blue, Green, and red ships can be seen orbiting outer planets.

Planetary Purchases

      A core aspect of the game, and your ticket to victory, is the purchasing of planets in System-17C. Purchasing planets is crucial to building your economy, and more importantly, painting the map your ship's color. To purchase a planet, you must fulfil a couple requirements. First, your ship must currently be orbiting the planet you would like to buy. Second, you must have more credits than the "P-cost" of the planet, and this can be determined by checking your navbar. Once you have met these requirements you can press the "b" key on your keyboard, and this will purchase the planet you are currently orbiting. To confirm that your purchase went through, always be sure to check that the planet has changed from its original color to the color of your ship. Once you have purchased a planet, it will begin producing more credits for you and can fuel your continued expansion to other planets. Another feature of System-17C that you should note is that opposing players are able to buy your planets out from under you. This strategy can be very effective in sabotaging the economy of other players. This aspect of the game means you need to pay close attention to your opponents and protect your production base from being taken by other players. Purchasing planets and taking those of your enemies will be your path to solar hegemony!

Dyson Sphere

      The creation of the Dyson Sphere is how you mark your dominion and win the game. To successfully build the Dyson sphere a player must upgrade the central star three times, and this will be no easy feat. For a player to upgrade the Dyson Sphere they must satisfy three conditions:

1. Their ship must be on the innermost ring of planets

2. They must own at least three of the innermost planets

3. They must have more credits than the current "D-cost" listed in the navbar

      Once you have achieved all of these conditions, you can press the "d" key on your keyboard to upgrade the Dyson Sphere. After upgrading the Dyson Sphere for the first time a ring of your color will appear around the star and the "Dyson" box in the navbar will increment by one level. This will signify that the Dyson sphere has been upgraded one time in your favor. You will also notice that the "D-cost" of the next Dyson Sphere upgrade will have increased by 150%; in System-17C, each successive Dyson Sphere upgrade will be more difficult than the last. If you can successfully upgrade the Dyson Sphere to level three, then you will receive an alert on your screen informing you of your victory. Based on the current description, this may sound like an easy win, but

you should remember that this is a competitive game. Other players are free to sabotage the development of your Dyson Sphere. If an opposing player meets all the Dyson Sphere requirements, they can downgrade the Dyson Sphere back to level zero and then begin developing their own Dyson Sphere in its place. Be very cognizant of other players' control on the innermost stars so that they cannot downgrade your Dyson Sphere.
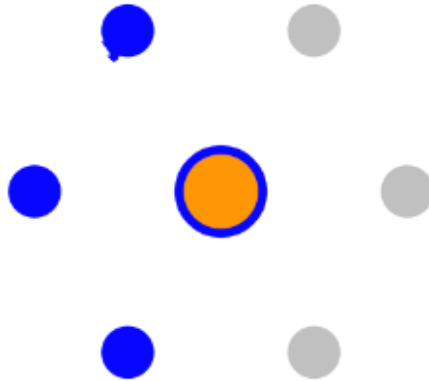
Figure 3. Dyson Sphere development. Three blue stars and an upgraded Dyson Sphere ring.

A Developer's Guide to Solar Domination

Below are some helpful tips for ensuring your victory in System-17C

1. Start with 2-3 outer planets, but try to obtain inner planets quickly as they produce significantly more credits.

2. Create a core group of planets as the base of your economy.

3. Remember to put resources into stealing your opponents' planets, because if you let their economy get too strong, you will certainly lose

4. Once you have begun upgrading the Dyson Sphere, attempt to control all six inner planets. Not only are these stars highly lucrative, but controlling them prevents your opponents from sabotaging your Dyson Sphere.

By following all of these rules you are certain to find success during your journeys in System-17C. Enjoy your solar conquesting!