PROJECT 7

Starlink Intersatellite Link (ISL) for communication satellites

DOCUMENTATION

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Basic working of the application.

Basically the Starlink project has basic entities like ground stations,lower earth satellites(LEO) and higher orbit satellites(GSO) . here we have 10 ground stations numbered 0 to 9 , 5 LEO numbered 0 to 4 and one GSO. We are trying to get the shortest path for communication between two ground stations.

We basically input few data from the user. First of all we need to get the numer of messages to be communicated . Then the application asks for the two ground stations ,the origin and the end ground station. Depending on the inputs the program gives the output in a step by step manner for each hop of the message. We have also handled all the cases of errors that are posible using exception handling.

1)Classes

1) Starlink class : It is basically the driver class of the system. It nests all other classes. It contains the global variables,other classes and an interface.

2) Constellation class: It defines the arrays with list of ground stations and LEO satellite.It also has a method called showConstellation that shows all the available LEO satellites and ground stations

3) Satellite : Satellite class extends constellation class and has method getNextId that can be used to add more layers to the application for further use.

4)Communication interface: It is an interface that has a method called sendMessage that acts an abstract function. This interface is implemented in LEOSatellite class.

5)LEOSatellite class: This is the most important class of our application. It implements the communication interface and also extends the satellite class. It has overridden method send message and it finds out which LEO satellite to send message from origin and which LEO to send messages for end.

Then comes the main method which is the driver method of the entire application. It takes input from the user for origin and end of the message.The objects for the LEO satellite and constellation classes are created here using which we have called their functions. We have handled invalid inputs using error handling and also closed the scanner for preventing memory leak.

Future work possible: This application can e extended for multiple more layers of LEOs and also for interconnecting constellations to enable interplanetary communication.