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Compiler Design **ASSIGNMENT-1**

1. What is the name of your language?

=> I would like to name my language **CelestialScript** because it is specifically tailored for astronomers and astrophysicists working with space-based observatories and telescopes. It simplifies the complex tasks involved in capturing, analysing, and processing astronomical data.

2. How is it different from other available languages?

=> CelestialScript is different from other available languages because it is designed to handle astronomical data and calculations efficiently and accurately. It also has a syntax that is inspired by the symbols and notation used in astronomy and astrophysics. For example, it uses the Greek alphabet for variables and constants, and it supports units and dimensions for physical quantities.

Some possible features of CelestialScript are:

- It has built-in functions and libraries for common astronomical tasks, such as coordinate conversions, celestial mechanics, photometry, spectroscopy, etc.
- It can communicate with space-based observatories and telescopes via a standard protocol, and retrieve and process the images and data they produce.
- It can perform parallel and distributed computing to handle large-scale simulations and analyses of astronomical phenomena.

- It has a graphical user interface that allows users to visualise and interact with the data and results in various ways, such as plots, maps, animations, etc.
- CelestialScript interfaces with telescope control systems and observatory equipment. Astronomers can write scripts to automate the movement of telescopes, filter changes, and camera exposures.
- The language offers built-in capabilities for tracking celestial objects such as stars, planets, asteroids, and galaxies. Astronomers can easily write scripts to specify the coordinates and timeframes for observations.

3. Which language to be used to implement the compiler/programming language?

=> The language to be used to implement the compiler/programming language for CelestialScript could be **Python**, because it is a popular and versatile language that has many advantages, such as:

- It is easy to learn and use, with a clear and concise syntax and a large community of users and developers.
- It has many modules and packages that can be useful for compiler construction, such as **PLY** (Python Lex-Yacc), **ANTLR** (ANother Tool for Language Recognition), **LLVM** (Low Level Virtual Machine), etc.
- It has many scientific libraries that can be integrated with CelestialScript, such as **NumPy** (Numerical Python), **SciPy** (Scientific Python), **AstroPy** (Astronomical Python), etc.
- It supports multiple programming paradigms, such as imperative, functional, object-oriented, and reflective, which can give more flexibility and expressiveness to the compiler/programming language.

4. Github link: