**Project Overview**: Currently students new to programming have two options for environments they can use to program: text editors and Integrated Development Environments (IDE). Both of these options often hamper a new students ability to learn programming. Text editors are too bare bones and offer no assistance to the student as they work their way through beginning material. IDEs provide too much support, overwhelming the student with too many features, and offering too much assistance in debugging, a key skill for new programmers to develop. In IDE’s features such as auto generation of classes and syntax completion, prevent students from learning the ins and outs of a programming language, making them weaker developers when it comes to harder content.

The Educational IDE (EIDE) offers a new environment for beginning students to learn software development. Where as current development environments are very static for new students, the EIDE is a dynamic editor that evolves as the students skills develop. As students demonstrate they understand a concept such as creating a class, the editor then will unlock the auto generation feature. As a student knows how to debug a program the manual way with print statements, a debugger is unlocked. This will help students to learn to problem solve and learn a language without an editor that coddles them or leaves them stranded. A more welcoming environment is provided to the student, fostering their ability to learn.

In a classroom environment EIDE interfaces with a central teachers console, allowing instructors to set limits on features, as well as thresholds for when a skill considered mastered. The instructors console will also allow the collecting of all student data, allowing the editors to learn from each other and make better decisions based on their data.

EIDE can also provide a way for struggling students to get assistance on topics that they struggle with as they proceed through content. EIDE will be able to see where students are struggling and provide relevant explanations and resources so that the students are not abandoned and are able to move forward with the knowledge they need.

**Intellectual Merit:** The EIDE focuses on providing individual support to students, only unlocking features as individual students master a concept, functioning more in assistance as opposed to a crutch. Due to the individualized nature of how students learn, it will require a system to observer user habits and make decisions based on this. The backend of EIDE will rely on machine learning techniques to learn about students and will individually determine whether they are ready for a new feature. The developer of EIDE has experience in tutoring current CS students and observing how they struggle in learning to program with programs such as eclipse and Emacs and is himself a current student in CS. This combination of experience provides him with the ability see what is needed in the educational programming space and leads well into the ability to develop such an application.

**Broader Impact**: The EIDE has the potential to change the way current students think about and learn software development. By fostering a welcome environment for programming and slowly introducing concepts, students will become more experienced developers with the knowledge of how to use their tools in depth. While the current landscape for education tools is saturated with many tools, EIDE has the unique ability to provide individual support to users and to adapt to the material that a student is working on. EIDE does not hide the core programming concepts that current tools do and does not allow students to get stuck forever. EIDE is the first editor to grow with students and provide support that is on par with the students level.