

# Pequannock Township School District Curriculum Syllabus

## *Game Design*

### Course Description:

Game design is a course that will introduce students to the field of computer programming and video game design. The design of computer games involves a great deal of logic, along with practical and applied problem solving. Students will develop the ability to think abstractly about a problem and to break it down into smaller components. The programming environments Alice and App Inventor will be utilized as students learn fundamental programming concepts in the context of creating video games, mobile apps and animated videos.

### Course Standards:

The following is a list of NJSLS that describe what students are expected to know and be able to do as a result of successfully completing this course. The following NJSLS are the basis of the assessment of student achievement. The standards that are covered in each unit are listed below next to the unit name.

### Scope and Sequence

Unit Name & Time Period	NJSLS Standards
<b>Unit 1 ( 3-4 weeks )</b>  Alice - Introduction and Game Elements  This unit will engage and excite students to build their own computer applications and games. The unit will introduce students to the programming environment and enable them to begin building programs of their own design.	8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12.D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5
<b>Unit 2 ( 4-5 weeks )</b>	8.1.12.A.1, 8.1.12.B.2,

<p>Alice - User Interactivity and Random Events</p> <p>This unit will take game play to the next level with the introduction of uniquely random activities and game events based on the generation of ‘random’ numbers. The level of complexity and realistic game play will be greatly enhanced.</p>	<p>8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5</p>
<p><b>Unit 3 ( 6-7 weeks )</b></p> <p>Alice - Timers and Repetition</p> <p>This unit will introduce the use of timers and how they may be used for a variety of purposes including objects in motion. Once again, the level of complexity and realism of games will be greatly enhanced.</p>	<p>8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5</p>
<p><b>Unit 4 ( 5-6 weeks )</b></p> <p>App Inventor - Collision and List</p> <p>This unit will introduce collision detection and use of list data. Once again, the level of complexity and realism of games will be greatly enhanced.</p>	<p>8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5</p>

<p><b>Unit 5 ( 3-4 weeks )</b></p> <p>App Inventor - Procedures and Random Events</p> <p>This unit focuses on getting to know the App Inventor development environment. This will engage and excite students to begin building mobile app of their own design.</p>	<p>8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5</p>
<p><b>Unit 6 ( 3-4 weeks )</b></p> <p>App Inventor - Procedures and Random Events</p> <p>This unit will advance student knowledge of procedures and random events in App Inventor.</p>	<p>8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12.D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5</p>
<p><b>Unit 7 ( 5-6 weeks )</b></p> <p>App Inventor - Timer and Collision</p> <p>This unit will advance student knowledge of timers and collision in App Inventor.</p>	<p>8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7,</p>

	9.3. ST-ET.3, 9.3.ST-ET.5
<b>Unit 8 ( 4-5 weeks )</b>  List and Database  This unit will introduce accessing list and databases. Once again, the level of complexity and realism of games will be greatly enhanced.	8.1.12.A.1, 8.1.12.B.2, 8.1.P.C.1, 8.2.12. D.3, 8.2.12.E.1, 8.2.12.E.3, 8.2.12. E.4, 9.3. IT.2, 9.3. IT-PRG.4, 9.3.IT-PRG.5, 9.3. IT-PRG.6, 9.3.IT-PRG.7, 9.3. ST-ET.3, 9.3.ST-ET.5

## Assessments

Evaluation of student achievement in this course will be based on the following:

- a. In class assignments on the various computer platforms (Alice 3 & MIT App Inventor)
- b. In class assignments on Google Classroom such as Google Forms.

## Curriculum Resources

### Anchor Programs/Teacher Materials

#### Textbook:

No text is needed as the interface continually evolves and textbooks become almost instantly obsolete.

#### Ancillary Resources:

Various activities, handouts, programs, quizzes, tests and other resources collected from many enjoyable years of teaching Computer Science, along with a collegial network of some of the best minds in the field who are equally committed to helping students succeed in their pursuit of Computer Science and knowledge.

# Home and School Connection

The following are suggestions and/or resources that will help parents support their children:

- Code.org App Lab work is a great starting point to coding in Java
- Download and try some basic functionality in Alice 3
- Try to work through one of the example applications on MIT App Inventor