

CSAwesome Java Curriculum

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CSAwesome is a Java AP CSA and CS1 curriculum with 20,000 users on the Runestone ebook platform. The curriculum is online, free and interactive with embedded Java Active Code examples and problems, mixed-up code (Parsons problems), multiple-choice problems, and scaffolded coding challenges. There are many features of the Runestone platform that scaffold and differentiate learning for students. The curriculum is designed to broaden participation in CS and transition students from AP CSP (or CS0) to AP CSA (or CS1) with a variety of techniques such as scaffolded interactivity and creative and collaborative learning. Initial results from the 2020-2021 school year show average gains of 29% on the pre/post test built into the curriculum ($n=958$, $P<.001$). Pre and post surveys built into the ebook show slight gains in confidence in Java programming and pursuing further study or a career in computing ($P<.001$). Female students (22% of those who answered) performed similarly to all students. Students who took AP CSP (39%) prior to AP CSA performed slightly higher in the pre-test but had similar results otherwise. 47% of students rated themselves as beginner programmers and 30% intermediate at the beginning of the course; at the end of the course, 12% rated themselves as beginners and 43% as intermediate programmers.

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