

SCS1: A validated pseudocode-based assessment for introductory computer science

What is SCS1?

SCS1 is an assessment that can be used to measure CS1 learning. It has 27 questions written in a pseudocode language that has been validated with Java, Python, and MATLAB. It has three types of questions: definitional, tracing, and code completion. It covers nine content areas:

- fundamentals
- logical operators
- conditionals
- definite loops
- indefinite loops
- arrays
- function/method parameters
- function/method return values
- recursion
- object oriented basics

Who can use it?

Researchers:

- Create a new assessment and validate it against SCS1
- Test interventions with pre- and post- testing with SCS1

Teachers:

- Test new activities or curricula with pre- and post- testing with SCS1

How can I use it?

As of September 2020, the SCS1 assessment is now hosted on the LASSO platform. The Learning About STEM Student Outcomes (LASSO) platform is a free online platform that hosts, administers, scores, and analyzes research-based assessments. LASSO makes it easy to measure the impact of your teaching on student learning without taking up class time and automatically generates reports documenting shifts in student performance. LASSO currently hosts 48 instruments across 9 disciplines. To learn more about LASSO, visit its page on the Learning Assistant Alliance website (<https://learningassistantalliance.org/modules/public/lasso.php>). For more information about administering Research-Based Assessments online, the Learning Assistant Alliance recommends the article *Online Administration of Research Based Assessments* (<http://arxiv.org/abs/2008.03373>).

A step-by-step guide for signing up for an account on the LASSO platform can be found here: https://learningassistantalliance.org/modules/documentation/LASSO/LASSO_Guide.pdf. Additionally, FAQs can be found here: <https://sites.google.com/view/laa-resources/assessment-research-and-results/lasso-faq>

A formal write-up of the process of creating SCS1 can be found in: Parker, M. C., Guzdial, M., & Engleman, S. (2016, August). Replication, validation, and use of a language independent CS1 knowledge assessment. In *Proceedings of the 2016 ACM conference on international computing education research*(pp. 93-101). ACM.

Need more information? Have questions? Contact: scs1assessment@gmail.com. Please allow for 1 week for a reply.