COMP110 WORKSHEET 1: SPACECHEM

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Introduction

"The planet was a wretched wasteland, but I was so absorbed in the work that I hardly noticed. SpaceChem's reactor technology took what I had learned at university and transformed the principles of science to create new chemicals and compounds. I was enraptured by the process, which effectively amounted to alchemy."

— SpaceChem

SpaceChem is a puzzle game released in 2011 by independent developers Zachtronics. The gameplay consists of solving problems in a visual programming environment, and as such requires many of the skills required of a programmer. This worksheet allows you to begin developing these skills, even if you are not yet comfortable with the syntax of more conventional programming languages such as Python.

To complete this worksheet:

(a) **Play** SpaceChem — it is available on the PCs in the Games Academy, it can be purchased from Steam for around £7, or a free demo version is available;

(b) **Complete** all of the "research" and "production" levels on the planets of Sernimir II, Sernimir IV, and Danopth.

Submission instructions

Once you have completed each level, use the in-game video recording feature to **record a video** of your solution. **Upload** this video to Microsoft Stream, and ensure that you select "Allow everyone in your company to view this video". Note that SpaceChem disables its video recording feature for "defense" levels; you do **not** need to submit videos for these.

In addition, locate your SpaceChem **save file** on your hard disk, for example:

C:\Users\<your name>\AppData\Local\Zachtronics Industries \SpaceChem\save\000.user

Go to the formative submission area for Worksheet 1 on LearningSpace. **Upload** a zip file containing your save file, and a text file with links to your videos.
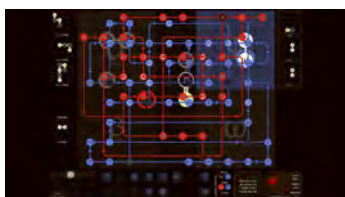
Stretch goals

SpaceChem is a puzzle game in which players must apply computational thinking to build circuits which assemble chemical molecules.

The basic task for this worksheet is to complete **all** "Research" and "Production" levels on Sernimir II, Sernimir IV, and Danopth, except for the optional challenge level "In-Place Swap".

Extra marks are available for completing one or more of the following stretch goals:

- Solve "Everyday is the First Day" in 300 cycles or fewer;
- Solve "It Takes Three" in 20 symbols or fewer;
- Solve "Challenge: In-Place Swap" from Danopth, and "An Introduction to Sensing", "Prelude to a Migraine" and "Random Oxides" from Alkonost.

Marking Rubric

To **pass** this assignment (achieve 40% or more), you must submit a reasonable attempt at the worksheet by the formative deadline stated on LearningSpace.

Criterion	Weight	Near Pass	Adequate	Competent	Very Good	Excellent	Outstanding
Basic competency threshold	30%	A reasonable attempt at the worksheet was not submitted by the formative deadline. Breach of academic integrity.					
PROCESS: Task completion	70%	No tasks have been completed.	At least one level has been completed and correctly submitted.	All "Research" and "Production" levels on Sernimir II, Sernimir IV, and Danopth, except for the optional challenge level "In-Place Swap", have been completed and correctly submitted.	All "Research" and "Production" levels on Sernimir II, Sernimir IV, and Danopth, except for the optional challenge level "In-Place Swap", have been completed and correctly submitted. One of the stretch goals listed above has been completed.	All "Research" and "Production" levels on Sernimir II, Sernimir IV, and Danopth, except for the optional challenge level "In-Place Swap", have been completed and correctly submitted. Two of the stretch goals listed above has been completed.	All "Research" and "Production" levels on Sernimir II, Sernimir IV, and Danopth, except for the optional challenge level "In-Place Swap", have been completed and correctly submitted. All three of the stretch goals listed above has been completed.