### **Data Processing**

### **Duration: 1 Week**

### **Summary**

This lesson continues the tutorials from code.org to have the student learn to sort, filter, categorize, and clean data. Then the student learns to generate summary tables, such as pivot tables, from the data. The student learns to tell a *Data Story* both from their own data set that they collected from a Google form in a previous assignment, and from external data sets that they download. The lesson also looks at the downside of Big Data including data breaches and privacy concerns. The assignment has them, in addition to doing the detailed tutorials, produce the computational artifacts of charts and tables to support their project on the Impact of Innovation.

### **Learning Objectives**

* Analyze the correctness, usability, functionality, suitability of computational artifacts (charts and tables). [AP CSP P4, LO 1.2.5]
* Develop an abstraction when creating a visualization computational artifact such as a pivot table. [AP CSP P2, 2.2.1]
* Use computers to process information, find patterns, and test hypotheses about digitally processed information to gain insight and knowledge. [AP CSP P4, LO 3.1.1]
* Explain the insight and knowledge gained from digitally processed data by using appropriate visualizations, notions, and precise language. [AP CSP P5, LO 3.1.2]
* Use large data sets to explore and discover information and knowledge. [AP CSP P3, LO 3.2.2]
* Describe how computing can do mathematics using spreadsheets.
* Describe how spreadsheets compute using the relationships between numeric data.
* Use spreadsheet software to perform basic mathematics and statistics.
* Use spreadsheet software to compute values based on related values.
* Extract information from data to discover and explain connections, patterns, or trends, such as with Google Trends. [AP CSP P1, LO 3.2.1]
* Analyze how data representation, storage, security, and transmission of data involve computational manipulation of information. [AP CSP P4, LO 3.3.1]
* Analyze the beneficial and harmful effects of computing. [AP CSP P4, 7.3.1]

### **Course Material**

* Watch: [Data And Medicine](https://www.youtube.com/watch?v=bMrDHtGHFR4&feature=youtu.be) [6:07]
* Watch: [Privacy - Your Data And Who Has Access To It](https://www.youtube.com/watch?v=bqWuioPHhz0&feature=youtu.be) [4:04]

### **Assessments**

* Conceptual Quiz:
  + [Data Analysis](https://docs.google.com/document/d/1usK2wKculLiUOb8I4NrjhrIITue0yVm3FqZVmcm-hgg/edit?usp=sharing) (requires access)
* Practical Assignment:
  + [Data Analysis - Processing Data](https://drive.google.com/open?id=1QNw3r4PtHkDc1ikCjfoNPkUjNqK39ofa1zwmdV4Yoxw) | [Grading Rubric](https://drive.google.com/open?id=1nlesq0IfH1wMmYEduDo2J5slpOsZD-5ZbJlHTBt3o6Y) | [Answer Key](https://docs.google.com/document/d/1j4NcvvtshIaVl_jk8u1EXgkcN_gpND_ygVhDiurpwjE/edit?usp=sharing)