

Weblinks

Chapter 1

Page 5

Lossless compression widget

Code.org has a great widget you can use to perform lossless compression on text interactively. After watching the short explanatory video, close the video, click 'Continue' button to try the widget!

<https://studio.code.org/s/text-compression/>

Page 6

Activity: Compression

Code.org text compression widget. After watching the short explanatory video, close the video, click 'Continue' button to try the widget!

<https://studio.code.org/s/text-compression/>

Watch the video *Aloe Blacc Explains Digital Compression*.

<https://code.org/educate/resources/videos>

Page 7

Activity: Scrambled!

http://www.douglastwitchell.com/scrambled_words.php

Consider: Have you noticed when doing a crossword, it is much easier to guess the word when you have the first letter?

Chapter 2

Page 12

Video: Cybersecurity jobs

<http://splash.abc.net.au/home#!/media/2238648/cybersecurity-jobs>

Page 14

Skill builder: Using letter frequency analysis to crack code

Click the 'Try now' button.

https://studio.code.org/s/frequency_analysis

Page 15

Web probe: Code cracking challenge!

Code.org Caesar shift widget.

<https://studio.code.org/s/hoc-encryption/stage/1/puzzle/1>

Teachers: The complete set of code.org activities for encryption can be found at:

<https://studio.code.org/s/hoc-encryption/>

Page 15

Video: Khan Academy

View the excellent videos explaining public-key encryption at Khan Academy.
<https://www.khanacademy.org/computing/computer-science/cryptography>

Page 16

Knowledge probe: How public–private key encryption works

Code.org Clock Arithmetic (Modulo). You will have to be logged in to code.org to use this. After reading the explanation, click ‘Continue’ button to proceed.
<https://studio.code.org/s/csp4/stage/7/puzzle/4>

Page 17

Class activity: Practising asymmetric encryption

Code.org has an excellent widget that automates public/private key encryption and shows the roles of Alice, Bob and Eve as part of its CSP course. You will have to be logged in to code.org to use this. After reading the explanation, click ‘Continue’ button to proceed.
<https://studio.code.org/s/csp4/stage/7/puzzle/6>

Chapter 3

Page 21

Activity: Comparing operating systems

Emulator for the 1991 Apple operating system.
https://archive.org/details/mac_MacOS_7.0.1_compilation

Teachers: Other emulators for old Apple products.
https://archive.org/details/softwarelibrary_mac

Page 24

Activity: Seeing the cycle in action!

The Most Complex Machine: A Survey of Computers and Computing by David Eck.
<http://math.hws.edu/TMCM.html>

xComputer applet page.
<http://math.hws.edu/TMCM/java/DownloadingAndInfo.html>

xComputer.jar (software file)
<http://math.hws.edu/TMCM/java/classes/xComputer.jar>

Note: Help is available at many online sites for opening .jar files on Windows and Mac. On Mac if security message states ‘From unknown developer’, locate actual downloaded file, right click and select ‘Open’.

Chapter 4

Page 33

'Immersion'

Video-game players' faces were captured by Robbie Cooper in a powerful video project he called 'Immersion'. The tears shed by one boy were the result of failing to blink.

It is recommended teachers view the video first and select an appropriate segment.

<https://www.nytimes.com/video/magazine/1194833565213/immersion.html>

Page 35

E-waste

Visit Greenpeace International and research e-waste.

www.greenpeace.org/international

Read these articles on e-waste.

<http://www.bbc.com/news/business-35244018>

<http://www.abc.net.au/radionational/programs/backgroundbriefing/2017-03-12/8329068>

Page 36

Class activity: What problems can technology solve?

The survey results are provided in the PDF file supplied as an online resource: *What problems can technology solve?*

Chapter 6

Page 55

Activity: Mobile tower simulation

Melbourne–Sydney density map

<https://blog.id.com.au/wp-content/uploads/Melbourne-Sydney-density-map-ABS.jpg>

Page 57

Web probe: Mobile base stations near you

Radio Frequency National Site Archive

<http://www.rfnsa.com.au>

Australian Radiation Protection and Nuclear Safety Agency

http://www.arpansa.gov.au/RadiationProtection/Factsheets/is_antenna.cfm

Page 58

Web probe: The need for speed

Use these test tools to complete the web probe. Which tool do you prefer?

<http://www.speedtest.net>

<http://speedof.me>

<https://www.ozspeedtest.com>

<http://www.speed.io>

Chapter 7

Page 62

Word Blanks

Your teacher will suggest you try one of the stories featured on this site before beginning your project.

<https://www.wordblanks.com/>

Chapter 8

Page 67

Code.org

<https://code.org/>

Grok Learning

<https://groklearning.com/>

Khan Academy

<https://www.khanacademy.org/>

Codecademy

<https://www.codecademy.com/>

Udemy

<https://www.udemy.com/>

W3Schools.com

<https://www.w3schools.com/>

Swift Playgrounds (iPad)

<https://www.apple.com/au/swift/playgrounds/>

Chapter 10

Page 75

Skill builder: OOP concepts

Play *Tetris* for a while before completing the table. Click the 'Play Now for Free' button.

<http://tetris.com>

Chapter 11

Page 81

Web probe: Computational thinking

Watch these videos on computational thinking.

Solving Problems at Google Using Computational thinking

<https://ed.ted.com/on/yQVnAEKJ>

CT at Google: Facilitating Software and Game Development through Abstraction

<https://www.youtube.com/watch?v=9ePRa5nahYI>

Chapter 12

Page 90

Web probe: Fibonacci

Watch the video *Doodling in Math: Spirals, Fibonacci and Being a Plant*.

<https://vimeo.com/147913571>

Page 94

Skill builder: Fun with recursion!

<http://portal.ozobot.com/lessons/detail/fibonacci-traveler>

Chapter 15

Page 100

Planning

Read about the *Game of Life*.

<https://bitstorm.org/gameoflife/>

Page 101

Designing

Refer to the large collection at the *Game of Life* Lexicon to complete the questions.

<https://bitstorm.org/gameoflife/lexicon/>

Chapter 16

Page 103

Defining

Videos to gain inspiration for your project.

The Universal Declaration of Human Rights

<https://vimeo.com/1823335>

My Last Day

Teacher warning: Some dialogue in this video is confronting.

<https://vimeo.com/123933555>

Page 104

GUI design principles

Visit the Adobe Color website for an extensive selection of colour palettes. Select the 'Explore' tab to see popular palettes.

<https://color.adobe.com/>

NOTE: Adobe XD is useful for prototyping

<https://www.adobe.com/au/products/xd.html>

Chapter 17

Page 106

Within

The phone app Within is a good virtual reality app to start with. Search the app store appropriate to your device.

<https://with.in>

Page 107

Aurasma

Download the Aurasma app and create an account on the website.

<https://studio.aurasma.com/landing>

Chapter 18

Page 111

Codepen

Codepen is a great site for writing, checking and experimenting with HTML code.

<https://codepen.io/>

Page 112

Infobit

W3Schools has an easy to read reference with interactive examples for learning HTML and CSS.

<https://www.w3schools.com/html/>

<https://www.w3schools.com/css/>

Page 112

Web probe: Learn HTML

Go to the Mozilla Developer Network and complete the ‘Getting started with the Web’ and ‘HTML – Structuring the Web’ sections now to extend your knowledge of HTML.

<https://developer.mozilla.org/en-US/docs/Learn/HTML>

Pages 112–15

Skill builder: A first web page using CSS

Use codepen for this activity.

<https://codepen.io/>

Explore CSS by watching the CSS demo and using the examples on the W3Schools website.

<https://www.w3schools.com/css/>

Page 115

Class activity: CSS Zen Garden

The CSS Zen Garden demonstrates how the same HTML page can be made to look dramatically different by changing the CSS code.

<http://www.csszengarden.com>

Page 116

Designing

First explore examples of existing Zen Garden designs using the first link to help you generate ideas. Then, download the HTML file and CSS file provided on the CSS Zen Garden site using the second link.

<http://www.mezzoblue.com/zengarden/alldesigns/>

<http://www.csszengarden.com>

Chapter 19

Page 120

First Fleet Database

<http://firstfleet.uow.edu.au/>

Fellowship of the First Fleeters

<http://www.fellowshipfirstfleeters.org.au/ships.html>

Page 122

Evaluating

Compare your database layout to one prepared by the University of Wollongong.

<http://firstfleet.uow.edu.au/search.html>

Chapter 20

Page 123

If you do not have access to a database tool, you can engage with one at either Grok Learning or W3Schools, where short courses are offered in SQL.

Grok Learning

<https://groklearning.com/>

W3Schools.com

<https://www.w3schools.com/>

Chapter 22

Page 134

Google Trends

<https://trends.google.com/trends/>

Page 134

Web probe: *Year In Search*

Each year Google creates a short video called *Year In Search 20XX* (where the XX is the current year) based on the most popular items searched by Google users in that year. 2015 and 2016 links are below, but you can also Google other years.

<https://trends.google.com.au/trends/yis/2016/GLOBAL>

https://trends.google.com/trends/story/2015_GLOBAL

Page 136

Google Trends Australia

<https://trends.google.com.au/trends/>

Page 137

Google Ngram Viewer

<https://books.google.com/ngrams>

Page 139

Web probe: *200 Years That Changed the World*

<http://www.gapminder.org/videos/200-years-that-changed-the-world/>

Page 139

Gapminder

Each link on this homepage is highly relevant and should be explored; however, make sure you use the actual 'Gapminder Tool' through its link.

<http://www.gapminder.org/>

Page 140

The Global Rich List

<http://www.globalrichlist.com>

Chapter 23

Page 142

Skill builder: Guided project 1

Download the Arduino IDE for this project.

<https://www.arduino.cc/en/Main/Software>

Use this URL for a circuit simulation on the TinkerCad website for the motorFan project.

<https://www.tinkercad.com/things/9M8yNimEoZc-motorfan/>

Page 144

Project 2: sensorFan

Use this URL for a circuit simulation on the TinkerCad website for the sensorFan project.

<https://www.tinkercad.com/things/dzIKtxVW5jm-sensorfan/>

Page 145

Project 3: Dual_Motor

Use this URL for a circuit simulation on the TinkerCad website for the Dual_Motor project. (Slightly different from the setup in the book.)

<https://www.tinkercad.com/things/cXFfaY3gUDq-dualmotor/>

Chapter 24

Page 153

Lego Mindstorms

Watch the tutorials and download the EV3 Programmer app.

<https://www.lego.com/en-us/mindstorms/learn-to-program>