

	Software or hardware	Websites
8.5 – Layers of computing systems (cont.)		<ul style="list-style-type: none"> <li>■ <a href="https://youtu.be/n-zeeRLBgd0">youtu.be/n-zeeRLBgd0</a></li> <li>■ <a href="https://teachablemachine.withgoogle.com">teachablemachine.withgoogle.com</a></li> <li>■ <a href="https://experiments.withgoogle.com/collection/ai">experiments.withgoogle.com/collection/ai</a></li> <li>■ <a href="https://quickdraw.withgoogle.com">quickdraw.withgoogle.com</a></li> <li>■ <a href="https://machinelearningforkids.co.uk">machinelearningforkids.co.uk</a></li> <li>■ <a href="https://projects.raspberrypi.org">projects.raspberrypi.org</a></li> <li>■ <a href="https://code.org/oceans">code.org/oceans</a></li> <li>■ <a href="https://royalsociety.org">royalsociety.org</a></li> </ul>
8.6 – Introduction to Python programming	<ul style="list-style-type: none"> <li>■ Python (we recommend the Mu IDE for desktop, or Repl.it for cloud-based)</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="https://repl.it">repl.it</a></li> <li>■ <a href="https://blog.teachcomputing.org/tag/pedagogy">blog.teachcomputing.org/tag/pedagogy</a></li> <li>■ <a href="https://pythontutor.com/visualize.html">pythontutor.com/visualize.html</a></li> <li>■ <a href="https://trinket.io">trinket.io</a></li> <li>■ <a href="https://projects.raspberrypi.org">projects.raspberrypi.org</a></li> <li>■ <a href="https://docs.python.org/3">docs.python.org/3</a></li> </ul>
9.1 – Python programming with sequences of data	<ul style="list-style-type: none"> <li>■ Python (we recommend the Mu IDE for desktop, or Repl.it for cloud-based)</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="https://repl.it">repl.it</a></li> <li>■ <a href="https://blog.teachcomputing.org/tag/pedagogy">blog.teachcomputing.org/tag/pedagogy</a></li> <li>■ <a href="https://pythontutor.com/visualize.html">pythontutor.com/visualize.html</a></li> <li>■ <a href="https://trinket.io">trinket.io</a></li> </ul>

	Software or hardware	Websites
9.1 – Python programming with sequences of data (cont.)		<ul style="list-style-type: none"> <li>■ <a href="http://projects.raspberrypi.org">projects.raspberrypi.org</a></li> <li>■ <a href="http://docs.python.org/3">docs.python.org/3</a></li> <li>■ <a href="http://www.gutenberg.org/ebooks/345">www.gutenberg.org/ebooks/345</a></li> </ul>
9.2 – Media - Animations	<ul style="list-style-type: none"> <li>■ Blender (free open source 3D creation software)</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="http://www.youtube.com/channel/UCZFUrFogvqIN8seaAeEwjIw">www.youtube.com/channel/UCZFUrFogvqIN8seaAeEwjIw</a></li> <li>■ <a href="http://en.wikipedia.org/wiki/File:Agathaumas.ogv">en.wikipedia.org/wiki/File:Agathaumas.ogv</a></li> </ul>
9.3 – Data science		<ul style="list-style-type: none"> <li>■ <a href="http://www.datawrapper.de">www.datawrapper.de</a></li> <li>■ <a href="http://www.youtube.com/watch?v=f_6IEKqS2I0">www.youtube.com/watch?v=f_6IEKqS2I0</a></li> <li>■ <a href="http://www.gapminder.org">www.gapminder.org</a></li> <li>■ <a href="http://berkeleyearth.lbl.gov/country-list">berkeleyearth.lbl.gov/country-list</a></li> <li>■ <a href="http://codap.concord.org">codap.concord.org</a></li> <li>■ <a href="http://datashine.org.uk">datashine.org.uk</a></li> <li>■ <a href="http://naei.beis.gov.uk/emissionsapp">naei.beis.gov.uk/emissionsapp</a></li> <li>■ <a href="http://www.gaugemap.co.uk">www.gaugemap.co.uk</a></li> </ul>

	Software or hardware	Websites
9.4 – Representations - Going audiovisual	<ul style="list-style-type: none"> <li>■ Image manipulation software (the resources in this unit have been tailored for GIMP, which is free and open source)</li> <li>■ Sound editing software (the resources in this unit have been tailored for Audacity, which is free and open source)</li> <li>■ Python</li> <li>■ Optional: Raspberry Pi with resistors, breadboard, jumper wires, 1 RGB LED</li> <li>■ Optional: Sonic Pi</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="http://curriculum.code.org">curriculum.code.org</a></li> <li>■ <a href="http://csfieldguide.org.nz">csfieldguide.org.nz</a></li> <li>■ <a href="http://www.cs4fn.org">www.cs4fn.org</a></li> <li>■ <a href="https://www.youtube.com/watch?v=7Jr0SFM04Rs">www.youtube.com/watch?v=7Jr0SFM04Rs</a></li> <li>■ <a href="http://pippin.gimp.org/image_processing/chap_dir.html">pippin.gimp.org/image_processing/chap_dir.html</a></li> <li>■ <a href="http://projects.raspberrypi.org">projects.raspberrypi.org</a></li> <li>■ <a href="http://trinket.io/sense-hat">trinket.io/sense-hat</a></li> <li>■ <a href="http://pythonhosted.org/sense-hat/api/#led-matrix">pythonhosted.org/sense-hat/api/#led-matrix</a></li> <li>■ <a href="http://scratch.mit.edu">scratch.mit.edu</a></li> <li>■ <a href="http://sonic-pi.net">sonic-pi.net</a></li> <li>■ <a href="https://soundcloud.com/the-british-library/first-recording-of-computer-music-1951-copeland-long-restoration">soundcloud.com/the-british-library/first-recording-of-computer-music-1951-copeland-long-restoration</a></li> <li>■ <a href="https://commons.wikimedia.org/wiki/File:Chopin_-_Nocturne_in_F_Minor_variation.mid">commons.wikimedia.org/wiki/File:Chopin_-_Nocturne_in_F_Minor_variation.mid</a></li> <li>■ <a href="http://www.vintagecomputermusic.com/mp3/s2t9_Computer_Speech_Demonstration.mp3">www.vintagecomputermusic.com/mp3/s2t9_Computer_Speech_Demonstration.mp3</a></li> <li>■ <a href="http://web.archive.org/web/20000407081031/http://www.bell-labs.com/news/1997/march/5/2.html">web.archive.org/web/20000407081031/http://www.bell-labs.com/news/1997/march/5/2.html</a></li> <li>■ <a href="http://en.wikipedia.org/wiki/MIDI">en.wikipedia.org/wiki/MIDI</a></li> <li>■ <a href="http://parametric.press/issue-01/unraveling-the-jpeg">parametric.press/issue-01/unraveling-the-jpeg</a></li> <li>■ <a href="http://classic.csunplugged.org">classic.csunplugged.org</a></li> <li>■ <a href="http://www.bbc.co.uk/bitesize/clips/zc2svcw">www.bbc.co.uk/bitesize/clips/zc2svcw</a></li> <li>■ <a href="http://teachinglondoncomputing.org/compression-code-puzzles">teachinglondoncomputing.org/compression-code-puzzles</a></li> </ul>

	Software or hardware	Websites
9.5 – Introduction to cybersecurity		<ul style="list-style-type: none"> <li>■ <a href="https://threatmap.checkpoint.com">threatmap.checkpoint.com</a></li> <li>■ <a href="https://scratch.mit.edu">scratch.mit.edu</a></li> <li>■ <a href="https://forbusiness.snapchat.com/advertising#targeting">forbusiness.snapchat.com/advertising#targeting</a></li> <li>■ <a href="https://www.snap.com/en-GB/privacy/privacy-policy">www.snap.com/en-GB/privacy/privacy-policy</a></li> <li>■ <a href="https://help.instagram.com/519522125107875/?helpref=hc_fnav&amp;bc[0]=Instagram%20Help&amp;bc[1]=Privacy%20and%20Safety%20Center">help.instagram.com/519522125107875/?helpref=hc_fnav&amp;bc[0]=Instagram%20Help&amp;bc[1]=Privacy%20and%20Safety%20Center</a></li> <li>■ <a href="https://policies.google.com/privacy#infocollect">policies.google.com/privacy#infocollect</a></li> <li>■ <a href="https://en-gb.facebook.com/policy.php">en-gb.facebook.com/policy.php</a></li> <li>■ <a href="https://www.ncsc.gov.uk">www.ncsc.gov.uk</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/Hacktivism">en.wikipedia.org/wiki/Hacktivism</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/2016_Dyn_cyberattack">en.wikipedia.org/wiki/2016_Dyn_cyberattack</a></li> <li>■ <a href="https://www.cps.gov.uk/legal-guidance/computer-misuse">www.cps.gov.uk/legal-guidance/computer-misuse</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/Computer_virus">en.wikipedia.org/wiki/Computer_virus</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/Computer_virus#First_examples">en.wikipedia.org/wiki/Computer_virus#First_examples</a></li> <li>■ <a href="https://us.norton.com/internetsecurity-malware-what-is-a-computer-virus.html">us.norton.com/internetsecurity-malware-what-is-a-computer-virus.html</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/Computer_worm">en.wikipedia.org/wiki/Computer_worm</a></li> <li>■ <a href="https://us.norton.com/internetsecurity-malware-what-is-a-computer-worm.html">us.norton.com/internetsecurity-malware-what-is-a-computer-worm.html</a></li> <li>■ <a href="https://antivirus.comodo.com/blog/computer-safety/computer-worm-definition">antivirus.comodo.com/blog/computer-safety/computer-worm-definition</a></li> <li>■ <a href="https://en.wikipedia.org/wiki/Ransomware">en.wikipedia.org/wiki/Ransomware</a></li> <li>■ <a href="https://www.malwarebytes.com/ransomware">www.malwarebytes.com/ransomware</a></li> <li>■ <a href="https://uk.norton.com/internetsecurity-malware-ransomware-5-dos-and-donts.html">uk.norton.com/internetsecurity-malware-ransomware-5-dos-and-donts.html</a></li> </ul>