**Class Materials**

**QMUL - Creating Interactive Objects 2025/2026**

Andrea Alessandrini

* Arduino Uno boards
  + (x25) <https://www.rapidonline.com/arduino-uno-a000066-board-r3-73-4440> £27.56
* USB cables
  + (x25) <https://www.rapidonline.com/orangepip-usb-cable-a-male-to-b-male-50cm-75-0552> £2.17
* Breadboards (S2)
  + (x25) <https://www.rapidonline.com/k-h-rh-21-prototyping-breadboard-840-tie-points-34-0655> £16.57
  + Alternative (x25) <https://www.rapidonline.com/velleman-vtbb1n-breadboard-set-170x18x55mm-140-parts-10-8798> £12.02
  + (x25) <https://www.rapidonline.com/k-h-ad-102-advanced-solderless-breadboard-456-tie-points-34-0676> £9.61
  + (x25) <https://www.rapidonline.com/velleman-vtbb3-breadboard-400-pins-grey-82x8x55mm-1piece-10-8800> £2.59
* LEDs (S2)
  + (x1000) <https://www.rapidonline.com/truopto-osnr5164a-5mm-red-led-pack-of-1000-55-1798> £96.60
  + alternative (x1000) <https://www.rapidonline.com/kingbright-l-7113lid-5mm-red-led-low-current-1000pk-56-0433> **£59.40**
  + (x1000) <https://www.rapidonline.com/truopto-osng5164a-5mm-green-led-pack-of-1000-55-1800> £123.72
  + (x1000) <https://www.rapidonline.com/truopto-osny5164a-5mm-yellow-led-pack-of-1000-55-1802> £133.86
  + (x100) <https://www.rapidonline.com/truopto-osub5164a-x100-5mm-3-3v-blue-led-pack-of-100-55-1754> £31.33
  + (x100) <https://www.rapidonline.com/truopto-ospw5162a-x100-5mm-3-3v-white-led-pack-of-100-55-1758> £32.04
  + (x100) <https://www.rapidonline.com/truopto-ostama5b61a-full-colour-5mm-led-60-water-clear-72-9643> £ 143
* Serial-to-USB converter
  + (x2) <https://www.digikey.it/it/products/detail/eaton-tripp-lite/USA-19HS-C/9962627>
* Resistors
  + (x1000) 100-ohm <https://www.rapidonline.com/royal-ohm-cfr0w4j0101a10-100r-carbon-film-resistor-0-25w-box-1000-62-0349>
  + (x1000) 470-ohm <https://www.rapidonline.com/royal-ohm-cfr0w4j0471a10-470r-carbon-film-resistor-0-25w-box-1000-62-0365>
  + (x1000) 100k <https://www.rapidonline.com/royal-ohm-cfr0w4j0104a10-100k-carbon-film-resistor-0-25w-box-1000-62-0421>
  + (x1000) 220-ohm <https://www.rapidonline.com/royal-ohm-cfr0w4j0221kit-220r-carbon-film-resistor-0-25w-pack-of-100-62-0354> £11.59
  + (x1000) 10K <https://www.rapidonline.com/royal-ohm-cfr0w4j0103a10-10k-carbon-film-resistor-0-25w-box-1000-62-0397> £11.17
  + (x1000) 22K <https://www.rapidonline.com/royal-ohm-cfr0w4j0223a10-22k-carbon-film-resistor-0-25w-box-1000-62-0405>
  + (x1000) 560 <https://www.rapidonline.com/royal-ohm-cfr0w4j0561a10-560r-carbon-film-resistor-0-25w-box-1000-62-0367> £11.17
  + (x1000) 1k <https://www.rapidonline.com/royal-ohm-cfr0w4j0102a10-1k-carbon-film-resistor-0-25w-box-1000-62-0373> £11.17
  + (x1000) 4.7k <https://www.rapidonline.com/royal-ohm-cfr0w4j0472a10-4k7-carbon-film-resistor-0-25w-box-1000-62-0389> £11.17
  + (x1000) 1 M <https://www.rapidonline.com/royal-ohm-cfr0w4j0105a10-1m-carbon-film-resistor-0-25w-box-1000-62-0445> £11.17
  + (x1000) 10M <https://www.rapidonline.com/royal-ohm-cfr0w4j0106a10-10m-carbon-film-resistor-0-25w-box-1000-62-0469> £11.17
  + (x1) Kit <https://www.rapidonline.com/royal-ohm-1-4w-5-86-values-carbon-film-kit-62-1511> £60.02
* tactile push button
  + (x10 pz.) <https://www.rapidonline.com/diptronics-dts-24-v-7-3mm-square-12-x-12-tactile-switch-78-0640> £0.506
  + (x10 pz.) <https://www.rapidonline.com/omron-b3f-4005-tactile-pcb-switch-12-x-12mm-4-3mm-260gf-round-type-78-0137> £0.612
  + (x10 pz.) <https://www.rapidonline.com/diptronics-dts-24-v-7-3mm-square-12-x-12-tactile-switch-78-0640> £0.506
  + (x10 pz.) <https://www.rapidonline.com/diptronics-dts-21n-v-4-3mm-rnd-12-x-12-tactile-switch-78-0630> £0.400
  + (x10 pz.) <https://www.rapidonline.com/diptronics-dts-24r-v-7-3mm-sq-12-x-12-tactile-switch-260gf-78-0631> £0.428
  + (x10 pz.) <https://www.rapidonline.com/omron-b3f-4055-tactile-pcb-switch-12-x-12mm-7-3mm-260gf-round-78-0138> £0.360
  + (x10 pz.) <https://www.rapidonline.com/omron-tactile-pcb-switch-b3f-4050-12x12-projected-78-0288> £0.358
  + (x10 pz.) <https://www.rapidonline.com/omron-tactile-pcb-switch-b3f-4000-12x12-flat-type-78-0286> £0.301
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-22k-black-button-12-x-12mm-round-78-1193> £0.182
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-22i-ivory-button-12-x-12mm-round-78-1192> £0.182
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-22ge-grey-button-12-x-12mm-round-78-1196> £0.175
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-21i-ivory-button-12-x-12mm-square-78-1184> £0.160
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-21g-green-button-12-x-12mm-square-78-1186> £0.142
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-22b-blue-button-12-x-12mm-round-78-1190> £0.138
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-21k-black-button-12-x-12mm-square-78-1185> £0.116
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-21r-red-button-12-x-12mm-square-78-1183> £0.116
  + (x10 pz.) <https://www.rapidonline.com/diptronics-ktsc-21ge-grey-button-12-x-12mm-square-78-1188> £0.0082
* Potentiometer
  + (x25) <https://www.rapidonline.com/omeg-eco10klin-10k-eco-16mm-linear-single-control-65-1404> £1.94
  + (x25) <https://www.rapidonline.com/piher-pt15lh05103a3030-10k-30-0-25w-15mm-carbon-potentiometer-vertical-mount-51-9084> **£0.923**
* LDR/Photoresistor
  + (x50) <https://www.adafruit.com/product/161> $0.76
* Headers
  + (x25) <https://www.rapidonline.com/bkl-10120628-pin-strip-standard-1-row-20-pins-1pc-s-01-5716> **£0.967**
* Switch
  + (x25) <https://www.rapidonline.com/r-tech-780566-right-angle-miniature-slide-switch-spdt-4-4mm-actuator-78-0566>
* Microphone
  + (x25) <https://www.rapidonline.com/r-tech-524531-pcb-mounting-microphone-insert-9-8mm-52-4531> **£1.12**
* Mini Speaker
  + (x50) <https://www.adafruit.com/product/1891> $1.75
* Piezo buzzer
  + (x50) <https://www.rapidonline.com/r-tech-350905-5v-miniature-electronic-buzzer-35-0905> **£1.57**
* Servo
  + (x25) <https://www.rapidonline.com/rapid-pro-sg90-mini-servo-37-1330> **£5.52**
* Motor
  + (x15) <https://www.rapidonline.com/trumotion-s10-2270-38z-02-3v-13100-rpm-dc-motor-37-0140>
* Power supply connector, 2.1/2,5mm x 5.5mm male/female (S2)
  + (x10) <https://www.rapidonline.com/truconnect-std-2-1mm-dc-power-line-socket-20-1066> **£1.42**
  + (x10) <https://www.rapidonline.com/rvfm-ap-140-2-1mm-standard-dc-power-plug-20-0922>
  + (x10) <https://www.rapidonline.com/truconnect-std-2-5mm-dc-power-line-socket-20-1068> **£1.52**
  + (x10) <https://www.rapidonline.com/truconnect-2-5mm-standard-dc-power-plug-20-0915>
  + (x10) <https://www.rapidonline.com/bkl-072209-electronic-straight-coupler-5-5mm-external-2-5mm-internal-50-1385> **£2.08**
  + (x10) <https://www.rapidonline.com/bkl-072208-electronic-straight-coupler-5-5mm-external-2-1mm-internal-50-1384> **£3.47**
  + (x10) <https://www.rapidonline.com/trucomponents-201207-low-power-socket-straight-5-5-mm-2-1-mm-20-1207> **£0.750**
  + (x10) <https://www.rapidonline.com/truconnect-2-1mm-standard-dc-power-plug-20-0905>
  + (x10) <https://www.rapidonline.com/rvfm-a-4301-2-5mm-dc-power-line-socket-20-1064> **£1.10**
  + (x100)<https://www.rapidonline.com/molex-1731120203-d-sub-male-crimp-0-20-m-gold-18-22-awg-500-pcs-05-3111> **£1.90**
* Temperature sensor
  + (x25) <https://www.digikey.co.uk/en/products/detail/analog-devices-inc/TMP36GT9Z/820404> £1.21
* Tilt sensor
  + (x25) <https://www.rapidonline.com/comus-cw1300-1-non-mercury-tilt-switch-78-0760> **£1.67**
* Diode
  + (x100) <https://www.rapidonline.com/diotec-1n4007-rectifier-diode-1a-1000v-50-0387>
* Capacitors 100 v 1uF 10uF …
  + (x100) <https://www.rapidonline.com/suntan-ts13de2a010msb030r-1uf-100v-20-5-11mm-p-2mm-radial-alum-elec-cap-11-0289> **£0.056**
  + (x100) <https://www.rapidonline.com/suntan-ts170r2a220jsbna0r-22pf-5-100v-npo-p-2-54mm-radial-ceramic-capacitor-11-3427>
  + (x100) <https://www.rapidonline.com/suntan-ts170r1h103msbfb0r-0-01uf-20-50v-y5v-5-08mm-radial-ceramic-capacitor-11-3452>
  + (x100) <https://www.rapidonline.com/suntan-ts170r2a104ksbba0r-0-1uf-10-100v-x7r-2-54mm-radial-ceramic-capacitor-11-3442>
  + (x100) <https://www.rapidonline.com/suntan-ts13de2a3r3msb030r-3-3uf-100v-20-5-11mm-p-2mm-radial-alum-elec-cap-11-0291> **£0.072**
  + (x100) <https://www.rapidonline.com/suntan-ts14012a4r7msb030r-4-7-f-20-100v-105-c-2k-hrs-radial-alum-elec-capacitor-11-3548> **£0.120**
  + (x100) <https://www.rapidonline.com/suntan-ts14012a100msb0a0r-10-f-20-100v-105-c-2k-hrs-radial-alum-elec-capacitor-11-3549> **£0.101**
  + (x100) <https://www.rapidonline.com/suntan-ts13de2a220msb040r-22uf-100v-20-8-12mm-p-3-5mm-radial-alum-elec-cap-11-0294> **£0.139**
  + (x100) <https://www.rapidonline.com/suntan-ts14012a470msb0b0r-47-f-20-100v-105-c-2k-hrs-radial-alum-elec-capacitor-11-3550> **£0.323**
  + (x100) <https://www.rapidonline.com/suntan-ts14012a101msb0b0r-100-f-20-100v-105-c-2k-hrs-radial-alum-elec-capacitor-11-3551> **£0.424**
  + (x25) <https://www.rapidonline.com/panasonic-eca2ahg471-470uf-20-100v-105-c-radial-aluminium-electrolytic-11-2190> **£1.22**
  + **(x1)**<https://www.rapidonline.com/trucap-148-piece-105-c-radial-aluminium-electrolytic-kit-65-2716>
* **Transistors**
  + (x50) <https://www.rapidonline.com/st-tip120-darlington-npn-60v-5a-to220-81-0168>
  + (x50) <https://www.rapidonline.com/cdil-2n2222a-npn-transistor-general-purpose-rf-81-0256>
* Voltage Regulator
  + (x25) <https://www.rapidonline.com/st-l7805cv-5v-1a-voltage-regulator-47-3290>
  + (x25) <https://www.rapidonline.com/st-ld1117v33-3-3v-0-8a-ldo-regulator-82-3066>
* Connectors
  + (x15) <https://www.rapidonline.com/mh-mhdb9ss-9-way-female-solder-d-s-f-15-1696>

Prototyping Materials

* A4/A3 paper
* Cardboard, scissors, tape
* Post-it notes
* Colored pens/markers
* Foam, glue,

**Tools**

* Multimeter
  + (x25) <https://www.rapidonline.com/rapid-digital-multimeter-class-pack-of-16-16-0047>

* Soldering Stations
  + (x15) <https://www.rapidonline.com/xytronic-lf-399d-80w-digital-soldering-station-85-6790>
* Fume Extractor
  + <https://www.rapidonline.com/weller-ft91017699n-zero-smog-tl-fume-extractor-kit-2-fn-85-5803>
  + <https://www.rapidonline.com/weller-ft91019299-zerosmog-shield-pro-fume-extraction-85-6849>
* Solder lead free (S2)
  + (x20-25) <https://www.rapidonline.com/r-tech-857031-sc100e-solder-2-rosin-free-hf-flux-halide-free-0-7mm-250g-reel-85-7031>
* Third Hand (S2)
  + (x10-15) <https://www.rapidonline.com/toolcraft-to-6871371-zd-10f-third-hand-with-cast-iron-base-clips-07-7671>
* Desoldering pump (S2)
  + (x10-15) <https://www.rapidonline.com/bernstein-8-390-desoldering-pump-metal-teflon-tip-gold-195mm-length-08-6018>
* Wire stripper
  + (x5) <https://www.rapidonline.com/draper-55806-automatic-wire-stripper-cutter-for-single-strand-ribbon-cable-91-2423>
  + (x5) <https://www.rapidonline.com/ck-tools-t3894-ecotronic-esd-wire-stripping-pliers-0-4-1-3mm-93-3426>
  + (x5) <https://www.rapidonline.com/gedore-1829092-miniature-electronic-wire-stripping-pliers-03-6180>
* Cutters
  + (x5) <https://www.rapidonline.com/ck-tools-t3887-ecotronic-esd-side-cutters-93-3419>
  + (x5) <https://www.rapidonline.com/bernstein-3-0645-stripping-side-cutters-125mm-49-8544>
* Long nose pliers
  + (x5) <https://www.rapidonline.com/ck-tools-t3889-ecotronic-esd-long-snipe-nose-pliers-93-3421>
  + (x5) <https://www.rapidonline.com/knipex-25-01-125-snipe-nose-side-cutting-pliers-radio-pliers-125mm-50-9196>
* PSU Power supply (S2)
  + (x15) <https://www.rapidonline.com/ansmann-1209-0000-aps600-traveller-3-12v-universal-psu-18-2540>
* Plug
  + (x25) <https://www.rapidonline.com/okw-a9160003-comtec-9v-battery-clip-metal-1-pc-highly-durable-12-5686>
  + (x5) <https://www.rapidonline.com/comfortable-bh342-1b-4-x-aa-long-battery-holder-18-0110>
  + (x5) <https://www.rapidonline.com/comfortable-bh-343-2b-4-x-aa-short-battery-holder-18-0115>
  + (x5) <https://www.rapidonline.com/comfortable-bh-331b-3-x-battery-holder-aa-studs-18-0126>
* Glue Gun
  + (x5) <https://www.rapidonline.com/ck-tools-t6215a-glue-gun-80w-euro-plug-93-2616>
  + (x5) <https://www.rapidonline.com/ck-tools-t6219-125-glue-sticks-200mm-x-11mm-pack-of-125-93-2626>
* Multitool
  + (x1) <https://www.rapidonline.com/proxxon-28472-fbs-240-e-precision-drill-grinder-85-9950>
  + (x1) <https://www.rapidonline.com/proxxon-28-485-micromot-lbs-e-multifunction-tool-100w-with-case-12-7932>
  + (x1) <https://www.rapidonline.com/proxxon-28600-micromot-mb-200-drill-stand-85-9997>
  + (x1) <https://www.rapidonline.com/proxxon-28608-precision-vice-fmz-85-9966>
  + (x1) <https://www.rapidonline.com/bernstein-9-205-w-spannfix-vice-50mm-jaws-360-rotating-ergonomic-design-08-6077>
* Screwdriver set (S2)
  + (x3) <https://www.rapidonline.com/stanley-stht0-70885-screwdriver-set-35-piece-durable-precise-tools-07-2028>
  + (x3) <https://www.rapidonline.com/ks-tools-159-0005-ergotorqueplus-screwdriver-set-5-pcs-04-7088>
* Wires
  + (x2) Alpha Wire 3051/1 RD001 22 AWG PVC Red Hook Up Wire 1KFT <https://www.rapidonline.com/alpha-wire-3051-1-rd001-22-awg-pvc-red-hook-up-wire-1kft-01-5544> **£104.80**
  + (x2) <https://www.rapidonline.com/alpha-wire-3051-1-bk001-22-awg-pvc-black-hook-up-wire-1kft-01-5543> **£106.82**
  + (x2) UniStrand 1/0.6 Single Core Equipment Wire Multi Pack (11 Colours x 100m) <https://www.rapidonline.com/unistrand-1-0-6-single-core-equipment-wire-multi-pack-11-colours-x-100m-01-0380> **£131.12**
  + (25X) TruComponents 654945 Jumper set 140 pc(s) <https://www.rapidonline.com/trucomponents-654945-jumper-set-140-pc-s-65-4945> **£7.88**
  + (25X)<https://www.rapidonline.com/velleman-wjw351-jumper-set-multicolour-includes-7-colours-10-8811>
  + **(10X)** TruComponents 654961 Jumper set Multi-coloured Pins:1 75 Parts<https://www.rapidonline.com/trucomponents-654961-jumper-set-multi-coloured-pins-1-75-parts-65-4961> **£7.26**
  + (10X) Mueller BU-00286 Test Lead Kit Insulated Alligator Clips Multi-Colour <https://www.rapidonline.com/mueller-bu-00286-test-lead-kit-insulated-alligator-clips-multi-colour-05-4537> **£7.28**
  + (10X) R-TECH 524614 Pk of 10 Croc Leads (Red,Black,Blue,Green,Yellow) 380mm <https://www.rapidonline.com/r-tech-524614-pk-of-10-croc-leads-red-black-blue-green-yellow-380mm-52-4614> **£4.92**
  + (10X) <https://www.rapidonline.com/rapid-jw-d1-ff-jumper-wires-dupont-cable-f-f-26awg-1-pin-2-54mm-pitch-15cm-pk10-34-0681> **£3.85**
  + (10X) <https://www.rapidonline.com/rapid-jw-d1-mm-jumper-wires-dupont-cable-m-m-26awg-1-pin-2-54mm-pitch-15cm-pk10-34-0677> **£3.85**
  + (10X) <https://www.rapidonline.com/rapid-jw-d1-mf-jumper-wires-dupont-cable-m-f-26awg-1-pin-2-54mm-pitch-15cm-pk10-34-0679> **£3.85**