

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills: Show you have researched and used reliable sources to support your ideas. Include key theories and up-to-date information about mechanical dynamics, control systems, and software like MATLAB Simulink with proper referencing (Harvard style).		
Feedback: You included some relevant domain sources (e.g., primate crop-raiding context and a few component modelling papers), showing an attempt to justify design choices with evidence. You made a clear effort to link sources to specific elements (e.g., ultrasonic distance formula; PIR and piezo references). Feedforward: Range and quality of sources: Your reference list is heavily weighted towards Amazon product listings. These are not appropriate as academic/technical evidence (they can be used sparingly as <i>supplier links</i>, but not as core references). Replace most component citations with datasheets/manufacture documentation (e.g., HC-SR04 datasheet, PIR module datasheet, Arduino technical docs) and peer-reviewed control/dynamics sources (textbooks + journal articles). Harvard style accuracy: Several entries are not Harvard compliant (missing publishers, inconsistent author formatting, inconsistent capitalisation, incomplete journal details, inconsistent retrieval statements). Also check spelling consistency (e.g., “Haileage/Hailege”). Currency and seminal theory: Add up-to-date sources on low-power embedded sensing, off-grid power design, and human–wildlife conflict mitigation, plus core control theory references (PID, feedback, stability, sensor noise/false positives). MATLAB/Simulink documentation: The rubric explicitly expects engagement with MATLAB/Simulink documentation; currently your “simulation” appears closer to TinkerCAD/Arduino circuit simulation. If you used Simulink, cite it properly; if not, acknowledge the limitation and align your method to the brief.	15	6
2. Knowledge and Understanding Skills: Demonstrate that you understand the main concepts and principles behind your project, explaining how they relate to designing the monkey deterrent system and its challenges.		
Feedback: Your report clearly explains the scenario, constraints (no grid power, low cost, humane deterrence), and a plausible system architecture (sensors → microcontroller → actuators/alerts). You demonstrate understanding of basic sensing and actuation roles and provide block diagrams that communicate the system concept. Feedforward: Dynamics and control concepts need clearer explanation in context. You introduce $R(s)$, $G(s)$, $H(s)$, $C(s)$, but the mapping to your real system is not fully justified (e.g., what is the controlled variable: -distance to crops, deterrent intensity, probability of retreat?). Strengthen the theoretical narrative: Explain why feedback is needed here beyond “detect and react” (e.g., robustness, reducing habituation through variability, managing false triggers, performance measures). Power discussion needs engineering depth: A 9V battery approach is described, but limited analysis is given on expected runtime, current draw, duty cycle, and why solar was not adopted (or provide a feasible solar alternative, as invited by the brief).	20	15
3. Cognitive and Intellectual Skills: Use your analytical skills to develop and explain models, interpret results, and justify your design choices with clear reasoning and evidence.		
Feedback: You made an attempt to incorporate mathematical modelling (first-order models for PIR, DC motor, piezo; ultrasonic distance equation). You describe a logic-based behavioural response: as distance decreases, the alarm becomes faster and higher frequency: - this is a sensible design rationale. Feedforward:	20	14

Model–simulation–argument link needs to be strengthened. Transfer functions are presented, but you do not clearly show how parameters were selected, what assumptions were made, or how the models were used to predict behaviour (e.g., response time, overshoot, stability, sensitivity to noise). Control strategy needs evaluation. At Level 4, some comparison or justification is expected: for instance, why a threshold-based strategy rather than a PID loop, or how you would tune a controller if a continuous variable were controlled. You state that multiple deterrent outputs will reduce habituation; support this with literature and/or propose a simple experimental plan/logic randomisation strategy and argue why it helps. Use performance metrics. Even simple metrics (detection latency, false alarm rate assumptions, actuator response time, power per activation, coverage area) would strengthen your judgement and make your conclusions evidence-based rather than descriptive.		
4. Practical Application Skills: Apply what you know by modelling and simulating the system, considering real-world factors like cost and power supply, and show how your design works in practice.		
Feedback: The proposed prototype with an Arduino is realistic and low-cost, using readily available components and a microcontroller platform appropriate for rapid prototyping. The system behaviour is implemented in code (distance-based alarm behaviour + LCD bar indicator), which demonstrates practical implementation, not just theory. Costing is attempted and broadly consistent with a low-cost prototype approach. Feedforward: Screenshots are useful, but at Level 4 you should also provide measurable outputs (e.g., trigger thresholds, timing diagrams, frequency vs. distance mapping, latency from detection to alarm, and how the mapping was chosen). The report implies simulation but does not explicitly identify TinkerCAD. This must be corrected: name the tool, describe what was simulated (and what was not), and reference it. Power realism: A 9V battery is easy for demonstration, but you should discuss battery life, replacement burden, and solar feasibility (panel sizing, charge controller, storage). Even a rough calculation would strengthen this section. Consider local sourcing and maintenance. UK Amazon costs do not necessarily reflect availability or affordability in rural Zimbabwe; include a brief localised sourcing plan or alternative equivalents. Also consider separating “prototype cost” from “replication cost” and identifying which items are redundant (buying both a full kit and a separate UNO is questionable unless justified).	20	15
5. Transferable Skills for Life and Professional Practice: You will be assessed on how clearly and professionally you write your report and organise it (15 marks). Your ability to present your work confidently and effectively in the presentation and answer questions will be evaluated. This includes communication, organisation, and attention to detail (10 marks).		
Feedback: The structure is strong: clear headings, logical flow, and helpful diagrams/tables. The presentation slides are concise and aligned to the report content; limitations/future developments are thoughtfully identified. You communicate a coherent design concept and keep focus on humane, low-cost constraints. Feedforward: Technical writing accuracy and professionalism: Proofreading is needed for grammar, capitalisation, and consistency (e.g., “Peizo” vs “Piezo”, “PIC” vs “PIR”, inconsistent sentence casing, occasional informal phrasing). This affects credibility. Academic honesty / AI use: Your appendix states “//Code Written by Google Ai”. The assignment specification indicates AI support for writing/research/proofreading is not permitted (programming is permitted). You should explicitly clarify (a) what you prompted for, (b) what you changed, tested, and verified yourself, and (c) how you ensured correctness and safety. Also ensure this aligns with your module’s academic integrity expectations. Ensure figures are numbered and referenced properly in text, with sources for maps/images. Your contents page also shows odd page numbering (e.g., Introduction at “0”).	25	16

Report writing 10/15		
PP Presentation 6/10		

Assessment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)

Late Submission Penalties (tick if appropriate)

Up to 1 week late (40% Max)

Over 1 week late (0%)

66%

