**School of Computing Science and Digital Media**

**Faculty of Design and Technology**

**Coursework Assignment**

|  |  |
| --- | --- |
| Student Name\* | Jack Neilson |
| Matriculation Number\* | 1506801 |
| Contact Number (in case of urgent need) | 07990 850 875 |
| Course | CS Hons Year |
| Stage | BSc |
| Time taken to complete (hours) | 1-4 5-9 10-14 15-19 20+ |
| Lecturer | Ian Harris |
| Module Name | Ethical Hacking |
| Module Number | CM4103 |
| Coursework Title | WEP Attacks and Solutions |
| Coursework Part | Coursework |
| Handout Date | 26th Mar 2018 |
| Due Date | 23rd Apr 2018 |
| Submission Method | Via campusmoodle assessment dropbox |

*Declaration \*\* This* ***MUST*** *be affirmed by signing below*

**I confirm**

* **That the work undertaken for this assignment is entirely my own and that I have not made use of any unauthorised assistance.**
* **That the sources of all reference material has been properly acknowledged.**

|  |  |
| --- | --- |
| Student Signature\* | J. Neilson |
| Date Submitted\* |  |

For Office Use

**Marker’ Comments**

|  |  |
| --- | --- |
| Marker | Grade |

An extract from the University Regulations

1. **Academic Misconduct**

Refer also to Schedule 3.3 of this Regulation for guidance on this procedure.

**Academic Misconduct** is defined as any attempt by students to gain an unfair advantage in assessments and examinations. Examples of academic misconduct include plagiarism, cheating, falsifying data, collusion, bribery or attempted bribery, personation or any other activity intended to provide an unfair advantage.

* 1. **Plagiarism** is the practice of presenting the thoughts or writings of another or others as original, without acknowledgement of their source(s). All material used to support a piece of work should be carefully referenced and should not normally be copied directly unless as an acknowledged quote. Text translated into the words of the individual student should in all cases acknowledge the source.
  2. **Cheating** includes:
     + the taking of any unauthorised material into an examination;
     + obtaining copy of “unseen” papers in advance of an examination;
     + communicating or attempting to communicate in any way with another student during an examination;
     + copying or attempting to copy from another student during an examination or in the production of coursework;
     + wilful deception in any element of an examination or assessment.
  3. **Falsification of data** consists of the misrepresentation of the results of experimental work or the presentation of results from fictitious work.
  4. **Collusion** is the representation of unauthorised group work as that of an individual student.
  5. **Bribery** is the paying, offering or attempted exchange of an inducement for information or material intended to advantage the recipient in an examination or assessment.
  6. **Personation** consists of a substitute taking the place of a student in an examination.

**A student who aids and abets a fellow student to commit academic misconduct** **shall be deemed to have committed academic misconduct and will be dealt with accordingly.**

* **No coursework will be accepted more than one week after the due date under any circumstances.**
* **All courseworks may be electronically screened for evidence of plagiarism. ANY STUDENT WHO IS FOUND GUILTY OF SUBMITTING PLAGIARISED WORK WILL BE AWARDED A GRADE OF F.**
* **All courseworks must be submitted with the provided front cover sheet attached to the coursework. The front cover sheet must be SIGNED by the student.**
* **The mark for this coursework contributes 50% to the overall assessment of this module. To pass the module you must obtain an overall grade of D or better.**
* **The submission of coursework that is incorrectly referenced (or without references) will not obtain higher than a grade D.**

**Introduction:**

The aim of this coursework is to allow you to demonstrate the skills and techniques required to:

1. Identify and explain network protocols vulnerabilities and evaluate the security of an IT infrastructure.
2. Design and implement countermeasures to protect a network from unauthorised network access.
3. Understand the ethical and legal policies of network security testing.

SUBMISSION DUE **23rd Apr 2018**

**This component is worth 50% of your final grade**

**Scenario:**

Greenshoots Ltd, a small Aberdeen start-up company has asked you to consult on the security of their wireless network. The CEO has some concerns that their current infrastructure is not secure. Due to the continued use of some legacy industrial control equipment they must continue to implement a WEP secured wireless network. They will have to continue to do so until such time as the industrial control equipment can be upgraded.

**Assessment:**

1. Initially you should write a short executive style (‘non-technical’) report which discusses and evaluates the weaknesses of WEP and the attack vectors. This is intended to convince the Board of Directors of the need to upgrade the wireless infrastructure.
2. Propose and justify a solution to improve the security of the WEP network whilst it continues to be in use. This may be an intrusion detection system, additional layer of encryption or firewall implementation. Provide documentation on how to implement such a solution on a ‘test’ network for evaluation purposes by Greenshoots Ltd. (This need not be an actual wireless network, it could be on a LAN or between virtual hosts).
3. Having completed your report, the CEO of Greenshoots Ltd has raised concerns with you about the ethics and profession of ethical hacking. Produce a brief (executive summary style) report which explains the ethical framework and professional standards that ethical hackers operate within.

**Submission Guidance:**

* Copy and complete the above ‘Cover Page’. To confirm that you have understood the directions and regulations appropriate to this assessment. Add it to your report before submitting to campusmoodle.
* A single word document report
  + Approx. 10 pages in length
    - 1-2 Page WEP evaluation report (worth 25%)
    - 6-8 Page Implementation Work Instruction (worth 50%)
    - 1-2 Page Ethical report (worth 25%)
  + Cite references and provide sources
* Feedback & marking will be provided within 2 weeks via campusmoodle.
* A dropbox is available on campusmoodle, there is no hard copy submission for this module.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | |
| **GRADE** | **A** | **B** | **C** | **D** | **E** | **F** | **NS** |
| **DEFINITION** | EXCELLENT Outstanding Performance | COMMENDABLE Meritorious Performance | GOOD  Highly Competent  Performance | SATISFACTORY Competent Performance | BORDERLINE FAIL Open To Compensation | FAIL Unsatisfactory | NON-SUBMISSION |
| **(WEIGHTING) SOURCES OF ASSESSMENT CRITERIA** | IN ALL CASES WITHIN THE LIMITS APPROPRIATE TO THE LEVEL OF STUDY ... | | | | | | |
| **(x1)**  **WEP Protocol Analysis** | Excellent report which fully evaluates and discusses the security issues of WEP. | Very good report which mostly evaluates and discusses the security issues of WEP. | Report which mostly evaluates and discusses the security issues of WEP. May be missing some elements. | Report which evaluates and discusses some of the security issues of WEP. Missing elements. | Very poor report which fails to evaluate and discusses security issues of WEP. Missing several elements. | Report fails to evaluate and discusses security issues of WEP. | No report submitted |
| **(x2)**  **Work Instruction** | An excellent proposal and solution to improve network security. Work instruction to implement excellently produced and detailed. Justification outstanding. Additional features or testing documented. | A very good proposal and solution to improve network security. Work instruction to implement very well produced and detailed. Justification very good. May be missing/light in minor detail. | A good proposal and solution to improve network security. Work instruction to implement well produced and detailed. Justification good. May be missing/light in detail. | A satisfactory proposal and solution to improve network security. Work instruction to implement satisfactorily produced. Justification acceptable. Missing some details. | A poor proposal and solution to improve network security. Work instruction to implement is poor. Justification is poor. Missing many details, or inaccurate. | A proposal and solution fails to improve network security. Work instruction fails to implement. No justification. Missing many details, inaccurate. | No report submitted. |
| **(x1)**  **Ethical Statement** | Excellent report which fully evaluates and discusses the ethical, personal and business related Ethical Hacking issues | Very good report which mostly evaluates and discusses the ethical, personal and business related Ethical Hacking issues | Report which mostly evaluates and discusses the ethical, personal and business related Ethical Hacking issues that may result. May be missing some elements. | Report which evaluates and discusses some of the ethical, personal and business related Ethical Hacking issues that may result. Missing elements. | Very poor report which fails to evaluate and discusses ethical, personal and business related Ethical Hacking issues that may result. Missing several elements. | Report fails to evaluate and discusses ethical, personal and business related Ethical Hacking issues | No report submitted |