



## CYENG 312: Trusted Operating System (OS) – Fall 2022: Assignment 2

**Instructor: Dr. Shayan (Sean) Taheri**

**Note – Cheating and Plagiarism:** Cheating and plagiarism are not permitted in any form and cause certain penalties. The instructor reserves the right to fail culprits.

**Deliverable:** All your responses to the assignment questions should be included in a single compressed file to be uploaded in the Gannon University (GU) – Blackboard Learn environment.

**Question.** Provide **your comprehensive understanding** of the items, “**A**” to “**D**” with provision of a sample executable code in the C/C++ programming language for each of them. **You are “allowed” to use the codes from online references**, such the available ones in [GitHub](#).

### **A.** [Round-Robin Scheduling](#)

#### **References:**

1. [Program for Round Robin scheduling | Set 1 - GeeksforGeeks](#)
2. [Introduction to Round Robin Scheduling Algorithm \(C++ and Java Code\) | by shivam bhatele | Level Up Coding \(gitconnected.com\)](#)
3. [C++ Program For ROUND ROBIN Scheduling Algorithm - Studytonight](#)
4. [Round Robin Scheduling Program in C++ {Source Code} | Gantt Chart \(programmingwithbasics.com\)](#)
5. [Round Robin Scheduling in C Programming | Edureka](#)
6. [Round Robin Scheduling Program in C \(thecrazyprogrammer.com\)](#)
7. [Round Robin scheduling program in C++ with explanation - Cricket,Coding and Life \(shivammitra.com\)](#)
8. [Round Robin Scheduling Program in C++ - Learnprogramo](#)
9. [Implementation of Round Robin CPU Scheduling algorithm using C++ \(includehelp.com\)](#)
10. [C Program for Round Robin Scheduling | Scaler Topics](#)
11. [Round Robin Scheduling Algo in C++ Source Code Gantt Chart \(skellainnovations.com\)](#)
12. [Round Robin Program in C with Output - javatpoint](#)
13. [Round Robin Scheduling | Part-2 - Coding Ninjas CodeStudio](#)
14. [Round Robin Process Scheduling Algorithm Program in C/C++ - japp.io](#)
15. [Round Robin Scheduling Program in C - Sanfoundry](#)
16. [Round Robin Scheduling Algorithm \(opengenius.org\)](#)
17. [Round Robin Scheduling Program in C | OS Algorithm in C | Code Creator Programs](#)
18. [Round Robin RR scheduling algorithm Program Code in c and C++ with gantt chart - Educative Site](#)
19. [C Program for Round Robin scheduling \(tutorialspoint.com\)](#)
20. [Program for Round Robin scheduling | Set 1 - Tutorialspoint.dev](#)

## **B. Buffer Overflow Attack**

### **References:**

1. [Buffer overflow attacks in C++: A hands-on guide | Snyk](#)
2. [Buffer Overflow Attack with Example - GeeksforGeeks](#)
3. [Buffer Overflow – CS0 – C++ \(towson.edu\)](#)
4. [Easy Buffer Overflow Attack Tutorial for Beginner Programmers - Pinkhat Code](#)
5. [An introduction to computer buffer overflow problem on using unsecured C or C++ standard functions in C programs \(tenouk.com\)](#)
6. [Error: stack-buffer-overflow | Microsoft Learn](#)
7. [What is a Buffer Overflow Attack – and How to Stop it \(freecodecamp.org\)](#)
8. [Buffer Overflow Attack Explained with a C Program Example \(thegreekstuff.com\)](#)
9. [BUFFER OVERFLOW. BUFFER OVERFLOW | by AidenPearce369 | InfoSec Write-ups \(infosecwriteups.com\)](#)
10. [Buffer Overflow - CTF 101](#)
11. [Buffer Overflow | OWASP Foundation](#)
12. [How to Produce a Buffer Overflowed Program in Modern Visual Studio - SYANG.IO](#)
13. [A Beginner's Guide to Buffer Overflow Vulnerability | by Ashwin Goel | Techloop | Medium](#)
14. [Buffer Overflow Exploit - Dhaval Kapil](#)
15. [Exploring Buffer Overflows in C, Part Two: The Exploit | Tallan](#)
16. [Example 1: Simple buffer overflow | Details | Hackaday.io](#)
17. [Exploits: Buffer Overflows \(deterlab.net\)](#)
18. [Basic Buffer Overflow \(trellis24.github.io\)](#)

## **C. Hash-Based Message Authentication Code**

### **References:**

1. [Example C Program: Creating an HMAC - Win32 apps | Microsoft Learn](#)
2. [HMAC Authentication in Web API - Dot Net Tutorials](#)
3. [Portable C++ Hashing Library \(stephan-brumme.com\)](#)
4. [C++ practice \(5\) C++ implementation of authentication algorithm: HMAC based on SHA-512 - Programmer Sought](#)
5. [Hash-based Message Authentication Code \(HMAC\) – bitbuffer \(wordpress.com\)](#)
6. [RFC 2104: HMAC: Keyed-Hashing for Message Authentication \(rfc-editor.org\)](#)

## D. Secure Hash Algorithms

### **References:**

1. [C++ sha1 function :: zedwood.com](http://zedwood.com)
2. [SHA-1 Hash - GeeksforGeeks](http://GeeksforGeeks)
3. [Implement Secure Hashing Algorithm - 512 \( SHA-512 \) as Functional Programming Paradigm - GeeksforGeeks](http://GeeksforGeeks)
4. [:: General Purpose Hash Function Algorithms - By Arash Partow ::](http://ArashPartow.com)
5. [C++ hash | Learn the Working of hash function in C++ with example \(educba.com\)](http://educba.com)
6. [CSC 580: Cryptography and Security in Computing \(uncg.edu\)](http://uncg.edu)
7. [SHA-256 basic implementation in C++ with a test. \(github.com\)](http://github.com)
8. [Algorithms\\_in\\_C++: hashing/sha1.cpp File Reference \(thealgorithms.github.io\)](http://thealgorithms.github.io)
9. [std::hash - cppreference.com](http://cppreference.com)
10. [Secure Hashing Algorithm \(SHA-1\) - Source Code \(packetizer.com\)](http://packetizer.com)
11. [Portable C++ Hashing Library \(stephan-brumme.com\)](http://stephan-brumme.com)

**Important:** It is highly recommended to study the given references.