

## Waukesha County Technical College

10-150-154 Shell Scripting

# Course Design

### Course Information

|  |  |  |
| --- | --- | --- |
|  | Description | Enhance system administration and networking skills by learning Shell Script programming. Automate the use of powerful Linux/Unix commands and tools through Bash Shell scripts. Generate reports from system and log files, and perform the most common Windows administration tasks using Power Shell. |
|  | Career Cluster | Information Technology |
|  | Instructional Level | Associate Degree |
|  | Total Credits | 2.00 |
|  | Total Hours | 54.00 |

Target Population

This course was created for students that have some administrative skills in both LINUX/UNIX and Windows Servers.  Network Administrators and System Administration professionals as well as Web Developers would benefit from this course.

Pre/Corequisites

|  |  |
| --- | --- |
| Prerequisite | 150-188 Linux Essentials or 150-186 Linux Administration |

### Critical Life Skills

|  |  |
| --- | --- |
| 1. | Critical Thinking Skills: Evaluate pertinent information to reach an informed conclusion in personal, academic, and professional settings. |
| 2. | Problem-solving Skills: Solve personal, academic, and professional problems using disciplinary concepts and frameworks. |

### Program Outcomes

|  |  |
| --- | --- |
| 1. | Implement client systems |
| 2. | Implement server operating systems |
| 3. | Implement network security components |
| 4. | Develop technical documentation |
| 5. | Troubleshoot network systems |

### Course Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Identify text that matches RegEx patterns | |
|  | Linked Critical Life Skills | |
|  | Problem-solving Skills: Solve personal, academic, and professional problems using disciplinary concepts and frameworks. | |
|  | Linked Program Outcomes | |
|  | Implement server operating systems  Implement network security components | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to write a syntactically correct RegEx |
|  | 1.b. | Describe the proper use of Metacharacters in RegEx |
|  | 1.c. | Identify the situtations that Quantifiers should be used in RegEx |
| 2. | Manipulate the content of files | |
|  | Linked Critical Life Skills | |
|  | Problem-solving Skills: Solve personal, academic, and professional problems using disciplinary concepts and frameworks. | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will meet expectations when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Describe how to modify text using sed scripts in LINUX |
|  | 2.b. | Identify awk commands and functions to parse files |
|  | 2.c. | Describe how to modify files using PowerShell in Windows |
|  | 2.d. | Match problems with the built-in functions that provide the solution. |
| 3. | Identify the best tool for a specific task within a specific environment | |
|  | Linked Critical Life Skills | |
|  | Critical Thinking Skills: Evaluate pertinent information to reach an informed conclusion in personal, academic, and professional settings. | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | You will know when you are successful when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Analyze a Problem Statement |
|  | 3.b. | Identify the best tool in LINUX to solve the problem |
|  | 3.c. | Identify the best PowerShell cmdlet to solve a problem. |
| 4. | Manage environments by using variables | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 4.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 4.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 4.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 4.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 4.a. | List Environmental Variables including their uses |
|  | 4.b. | Describe how to manipulate the value of variables |
|  | 4.c. | Describe the role, function and proper syntax of variables and their values across multiple platforms. |
| 5. | Navigate the Linux and Windows File System | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 5.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 5.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 5.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 5.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 5.a. | Describe how to Redirect input and output files |
|  | 5.b. | Describe precisely how the bash command line handles stdin and stdout |
|  | 5.c. | Chain commands using by piping |
|  | 5.d. | Navigate the Linux file structure |
|  | 5.e. | Demonstrate how to modify and manage file permissions |
| 6. | Automate common system administration activities by implementing logical structures | |
|  | Linked Critical Life Skills | |
|  | Problem-solving Skills: Solve personal, academic, and professional problems using disciplinary concepts and frameworks. | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 6.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 6.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 6.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 6.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 6.a. | Describe how to implement decision logic in code |
|  | 6.b. | Describe how to implement loops logic in code |
|  | 6.c. | Describe how to use functions in scripts |
|  | 6.d. | Identify commands that may be combined to solve problems |
| 7. | Master the use of common administrative user interfaces | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 7.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 7.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 7.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 7.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 7.a. | Identify common commands and how to use thm in the bash shell |
|  | 7.b. | Describe how to utilize the command line interface (CLI) |
|  | 7.c. | Describe how to navigate the PowerShell integrated scripting environment (ISE) |
| 8. | Leverage cmdlets to accomplish daily management tasks | |
|  | Linked Critical Life Skills | |
|  | Problem-solving Skills: Solve personal, academic, and professional problems using disciplinary concepts and frameworks. | |
|  | Linked Program Outcomes | |
|  | Implement client systems  Implement server operating systems  Implement network security components  Develop technical documentation  Troubleshoot network systems | |
|  | Assessment Strategies | |
|  | 8.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 8.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 8.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 8.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 8.a. | Describe how to manage Processes with cmdlets |
|  | 8.b. | Describe how to manipulate files with cmdlets |
|  | 8.c. | Describe how to manage users with cmdlets |
| 9. | Create reports using PowerShell | |
|  | Linked Program Outcomes | |
|  | Develop technical documentation | |
|  | Assessment Strategies | |
|  | 9.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 9.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 9.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 9.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 9.a. | Describe how to format information returned by PowerShell in a variety of styles |
|  | 9.b. | Describe how to produce summary data in a report |

### Grading Information

|  |  |  |
| --- | --- | --- |
| Activity | Possible Points Each | Total Possible Points |
| Weekly Multiple Choice Questions (11 total) | 20 | 220 |
| Lab A Activities (12 total) | 35 | 420 |
| Lab B Activities (12 total) | 20 | 240 |
| Lab C Activities (2 total) | 5 | 10 |
| **Total** |  | **890** |

|  |
| --- |
| Metatags |
| Linux, PowerShell, Bash, Windows, Scripting, RegEx, vi, system administration, cmdlets, variables, conditions, loops, scripts, functions |

### Course Learning Plans and Performance Assessment Tasks

1 - Introduction to Environments

Overview/Purpose

In this lesson, the syllabus is reviewed, students introduce themselves and scripting in general is introduced.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Navigate the Linux and Windows File System | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to Redirect input and output files |
|  | 1.b. | Describe precisely how the bash command line handles stdin and stdout |
|  | 1.c. | Chain commands using by piping |
|  | 1.d. | Navigate the Linux file structure |
|  | 1.e. | Demonstrate how to modify and manage file permissions |
| 2. | Master the use of common administrative user interfaces | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Identify common commands and how to use thm in the bash shell |
|  | 2.b. | Describe how to utilize the command line interface (CLI) |
|  | 2.c. | Describe how to navigate the PowerShell integrated scripting environment (ISE) |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Participate in introductions and disclosure of student programming, admin and scripting background (F2F) | | |
| 2. | Review the Syllabus including class rules and practices (F2F) | | |
| 3. | Listen to a lecture on Linux and bash (F2F) | | |
|  | Learning Materials | | |
|  | Session #1: Presentation | [S1-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=eeb40460-9101-4209-88e5-17332a138c2d) |
| 4. | Listen to a presentation on Windows and the Command Line Interface (F2F) | | |
|  | Learning Materials | | |
|  | Session #1: Presentation | [S1-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=eeb40460-9101-4209-88e5-17332a138c2d) |
| 5. | Participate in a discussion on vi (F2F) | | |
|  | Learning Materials | | |
|  | Session #1: Presentation | [S1-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=eeb40460-9101-4209-88e5-17332a138c2d) |
| 6. | Watch the video on How to Evaluate a Problem Statement using MEA and IPO Techniques (online) | | |
|  | Learning Materials | | |
|  | Video - How to evaluate a problem statement using MEA and IPO techniques | https://www.wisc-online.com/learn/business/business-technology/cp5415/how-to-evaluate-a-problem-statement-using-mea |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete Lab A-Complete the “Linux Scavenger Hunt” – answer all questions for Lab A. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #1: Labs - Rubrics | [L1-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=f9b4ccac-5790-4b15-b320-292944b387f2) |
| 2. | Complete Lab B-PowerShell Scavenger Hunt (F2F) | | |
| 3. | Complete Lab C-Open vi and create a file named is\_file1.txt. (F2F) | | |
| 4. | Complete the multiple choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #1: Questions | Q1-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |

2 - Working with RegEx

Overview/Purpose

In this lesson, Regular Expressions will be introduced and practiced with grep.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Identify text that matches RegEx patterns | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to write a syntactically correct RegEx |
|  | 1.b. | Describe the proper use of Metacharacters in RegEx |
|  | 1.c. | Identify the situtations that Quantifiers should be used in RegEx |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on using RegEx (F2F) | | |
|  | Learning Materials | | |
|  | Session #2: Presentation | [S2-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=b2d04820-7e84-4660-8dc1-de701c1230a4) |
| 2. | Watch a demonstration on how to utilize Meta characters in RegEx (F2F) | | |
|  | Learning Materials | | |
|  | Session #2: Presentation | [S2-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=b2d04820-7e84-4660-8dc1-de701c1230a4) |
| 3. | Watch a demonstration on how to utilize Quantifiers in RegEx (F2F) | | |
|  | Learning Materials | | |
|  | Session #2: Presentation | [S2-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=b2d04820-7e84-4660-8dc1-de701c1230a4) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #2: Questions | Q2-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-In groups of two or three, play RegEx Golf for the time allotted.  (Instructor will indicate the duration of the activity)  https://regex.alf.nu/ (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #2: Labs - Rubrics | [L2-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=38ba469a-413a-4677-a833-b91a0303403a) |
| 3. | Complete Lab B-Using the file php\_errorlog.txt, create a file that only includes lines from April that include the word “error”. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #2: Labs - Rubrics | [L2-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=38ba469a-413a-4677-a833-b91a0303403a) |

3 - Using sed & awk

Overview/Purpose

In this lesson, the students will learn the basics of sed and awk.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Manipulate the content of files | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will meet expectations when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to modify text using sed scripts in LINUX |
|  | 1.b. | Identify awk commands and functions to parse files |
|  | 1.c. | Describe how to modify files using PowerShell in Windows |
|  | 1.d. | Match problems with the built-in functions that provide the solution. |
| 2. | Identify the best tool for a specific task within a specific environment | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | You will know when you are successful when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Analyze a Problem Statement |
|  | 2.b. | Identify the best tool in LINUX to solve the problem |
|  | 2.c. | Identify the best PowerShell cmdlet to solve a problem. |
| 3. | Navigate the Linux and Windows File System | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Describe how to Redirect input and output files |
|  | 3.b. | Describe precisely how the bash command line handles stdin and stdout |
|  | 3.c. | Chain commands using by piping |
|  | 3.d. | Navigate the Linux file structure |
|  | 3.e. | Demonstrate how to modify and manage file permissions |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Participate in a discussion on which Linux tool is the best tool to solve the problem (F2F) | | |
|  | Learning Materials | | |
|  | Session #3: Presentation | [S3-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=c9a162bf-1028-44c3-ba49-827d63ebb6c9) |
| 2. | Watch a demonstration on how to chain commands by using piping (F2F) | | |
|  | Learning Materials | | |
|  | Session #3: Presentation | [S3-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=c9a162bf-1028-44c3-ba49-827d63ebb6c9) |
| 3. | Listen to a lecture on how to navigate the Linux file structure (F2F) | | |
|  | Learning Materials | | |
|  | Session #3: Presentation | [S3-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=c9a162bf-1028-44c3-ba49-827d63ebb6c9) |
| 4. | Watch a demonstration on how to modify text using awk and sed scripts in LINUX (F2F) | | |
|  | Learning Materials | | |
|  | Session #3: Presentation | [S3-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=c9a162bf-1028-44c3-ba49-827d63ebb6c9) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #3: Questions | Q3-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Using sed, create an output file that includes the lines in php\_errorlog.txt. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #3: Labs - Rubrics | [L3-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=e426b19c-740a-43d8-84a3-efff48738bea) |
| 3. | Complete Lab B-Create a report (output to screen) from the file php\_errorlog.txt using awk. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #3: Labs - Rubrics | [L3-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=e426b19c-740a-43d8-84a3-efff48738bea) |

4 - Linux File Structure and Windows Command Line

Overview/Purpose

In this lesson, traditional Windows commands, command-line commands and batch scripting will be practiced.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Identify the best tool for a specific task within a specific environment | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | You will know when you are successful when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Analyze a Problem Statement |
|  | 1.b. | Identify the best tool in LINUX to solve the problem |
|  | 1.c. | Identify the best PowerShell cmdlet to solve a problem. |
| 2. | Navigate the Linux and Windows File System | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Describe how to Redirect input and output files |
|  | 2.b. | Describe precisely how the bash command line handles stdin and stdout |
|  | 2.c. | Chain commands using by piping |
|  | 2.d. | Navigate the Linux file structure |
|  | 2.e. | Demonstrate how to modify and manage file permissions |
| 3. | Automate common system administration activities by implementing logical structures | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Describe how to implement decision logic in code |
|  | 3.b. | Describe how to implement loops logic in code |
|  | 3.c. | Describe how to use functions in scripts |
|  | 3.d. | Identify commands that may be combined to solve problems |
| 4. | Master the use of common administrative user interfaces | |
|  | Assessment Strategies | |
|  | 4.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 4.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 4.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 4.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 4.a. | Identify common commands and how to use thm in the bash shell |
|  | 4.b. | Describe how to utilize the command line interface (CLI) |
|  | 4.c. | Describe how to navigate the PowerShell integrated scripting environment (ISE) |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on using the CLI (F2F) | | |
|  | Learning Materials | | |
|  | Session #4: Presentation | [S4-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bbf2c005-235c-4de1-a190-aa1c597da3c3) |
| 2. | Explore DOS commands (F2F) | | |
|  | Learning Materials | | |
|  | Session #4: Presentation | [S4-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bbf2c005-235c-4de1-a190-aa1c597da3c3) |
| 3. | Watch a demonstration on how to write batch files (F2F) | | |
|  | Learning Materials | | |
|  | Session #4: Presentation | [S4-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bbf2c005-235c-4de1-a190-aa1c597da3c3) |
| 4. | Listen to a lecture ntroducing the Linux File Structure (F2F) | | |
|  | Learning Materials | | |
|  | Session #4: Presentation | [S4-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bbf2c005-235c-4de1-a190-aa1c597da3c3) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #4: Questions | Q4-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Navigate the file structure of your windows machine by using the following commands: cd, mkdir, wildcards (\*, ?), >, >>, |, ., .., and drive letter.  Write down at least five differences between how these commands work verses how they work in Linux. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #4: Labs - Rubrics | [L4-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=721a45f2-e582-48e4-b634-88cab597df4c) |
| 3. | Complete Lab B-Create a script that executes the following steps: Prints out "Lab C", Change the background color to light grey and the Text to purple, create a file named ipconfigdata.txt that contains the output of the ipconfig command and open the file in Notepad. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #4: Labs - Rubrics | [L4-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=721a45f2-e582-48e4-b634-88cab597df4c) |

5 - Intro to PowerShell

Overview/Purpose

In this lesson, PowerShell will be introduced and examples will be explored.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Manage environments by using variables | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | List Environmental Variables including their uses |
|  | 1.b. | Describe how to manipulate the value of variables |
|  | 1.c. | Describe the role, function and proper syntax of variables and their values across multiple platforms. |
| 2. | Master the use of common administrative user interfaces | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Identify common commands and how to use thm in the bash shell |
|  | 2.b. | Describe how to utilize the command line interface (CLI) |
|  | 2.c. | Describe how to navigate the PowerShell integrated scripting environment (ISE) |
| 3. | Leverage cmdlets to accomplish daily management tasks | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Describe how to manage Processes with cmdlets |
|  | 3.b. | Describe how to manipulate files with cmdlets |
|  | 3.c. | Describe how to manage users with cmdlets |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Participate in a review discussion of the PowerShell environment (F2F) | | |
|  | Learning Materials | | |
|  | Session #5: Presentation | [S5-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bf6fb083-f88d-4d9b-8bb1-ec4e536ff924) |
| 2. | Listen to a lecture on the rights needed to perform an Execution in PowerShell (F2F) | | |
|  | Learning Materials | | |
|  | Session #5: Presentation | [S5-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bf6fb083-f88d-4d9b-8bb1-ec4e536ff924) |
| 3. | Watch a demonstration on and practice various, common Cmdlets (F2F) | | |
|  | Learning Materials | | |
|  | Session #5: Presentation | [S5-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bf6fb083-f88d-4d9b-8bb1-ec4e536ff924) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #5: Questions | Q5-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a script that using Windows PowerShell ISE that creates a file that lists all PowerShell commands.  Run the script and verify the contents of the file. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #5: Labs - Rubrics | [L5-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=cc5ac1bd-253a-45e9-b49f-c4dcee029ffb) |
| 3. | Complete Lab B-Create a script that creates three aliases. Run script by typing in the name in PowerShell. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #5: Labs - Rubrics | [L5-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=cc5ac1bd-253a-45e9-b49f-c4dcee029ffb) |
| 4. | Complete Lab C-Create a script that opens paint. The user should create an image named “pic.bmp”. Once paint is closed, the script should open the image in explorer. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #5: Labs - Rubrics | [L5-Shell-Scripting v2.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=cc5ac1bd-253a-45e9-b49f-c4dcee029ffb) |

6 - Writing Scripts

Overview/Purpose

In this lesson, the students will learn to create and run scripts: bash, sed, awk and PowerShell.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Automate common system administration activities by implementing logical structures | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to implement decision logic in code |
|  | 1.b. | Describe how to implement loops logic in code |
|  | 1.c. | Describe how to use functions in scripts |
|  | 1.d. | Identify commands that may be combined to solve problems |
| 2. | Master the use of common administrative user interfaces | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Identify common commands and how to use thm in the bash shell |
|  | 2.b. | Describe how to utilize the command line interface (CLI) |
|  | 2.c. | Describe how to navigate the PowerShell integrated scripting environment (ISE) |
| 3. | Leverage cmdlets to accomplish daily management tasks | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Describe how to manage Processes with cmdlets |
|  | 3.b. | Describe how to manipulate files with cmdlets |
|  | 3.c. | Describe how to manage users with cmdlets |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Participate in a review discussion on permissions in bash and Windows (F2F) | | |
|  | Learning Materials | | |
|  | Session #6: Presentation | [S6-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=79545cb3-24a8-4120-8dd5-993845c87ed8) |
| 2. | Listen to a lecture on bash, shell and awk scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #6: Presentation | [S6-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=79545cb3-24a8-4120-8dd5-993845c87ed8) |
| 3. | Watch a demonstration on  the creation and execution of a bash, awk and sed scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #6: Presentation | [S6-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=79545cb3-24a8-4120-8dd5-993845c87ed8) |
| 4. | Watch a demonstration on the creation and execution of an PowerShell script (F2F) | | |
|  | Learning Materials | | |
|  | Session #6: Presentation | [S6-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=79545cb3-24a8-4120-8dd5-993845c87ed8) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #6: Questions | Q6-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a bash shell script, named lab7.bash, that asks the user to enter five email addresses and writes the contents to a file named email.data. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #6: Labs - Rubrics | [L6-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5468f694-6f3f-40c1-9499-2ad54083488d) |
| 3. | Complete Lab B-Create a PowerShell script that performs the same tasks as lab7.bash, named lab7.ps1. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #6: Labs - Rubrics | [L6-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5468f694-6f3f-40c1-9499-2ad54083488d) |

7 - Using Variables

Overview/Purpose

In this lesson, the students will learn about Windows and bash environmental variables and how to create and use user defined variables in Windows batch, bash and PowerShell scripts.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Manage environments by using variables | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | List Environmental Variables including their uses |
|  | 1.b. | Describe how to manipulate the value of variables |
|  | 1.c. | Describe the role, function and proper syntax of variables and their values across multiple platforms. |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture the concept of Variables in Windows and Bash (F2F) | | |
|  | Learning Materials | | |
|  | Session #7: Presentation | [S7-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=59d88b3d-bf0c-4922-bc1d-8fc194e84ddb) |
| 2. | Participate in a discussion on user defined variables in batch file, bash shell and Power Shell scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #7: Presentation | [S7-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=59d88b3d-bf0c-4922-bc1d-8fc194e84ddb) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #7: Questions | Q7-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a Bash Script that performs following actions. The scripts need to: a) Ask the user for the number of users for five different systems b) Display the total and average number for the enterprise (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #7: Labs - Rubrics | [L7-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=8053f69b-365e-4948-b6e4-66429e27f5e7) |
| 3. | Complete Lab B-Create a PowerShellScript that performs following actions. The scripts need to: a) Ask the user for the number of users for five different systems b) Display the total and average number for the enterprise (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #7: Labs - Rubrics | [L7-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=8053f69b-365e-4948-b6e4-66429e27f5e7) |

8 - Implementing Conditions

Overview/Purpose

In this lesson, the students will learn to create conditional statements in: bash, and PowerShell.  The lesson will be built upon a common understanding of conditional logic.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Automate common system administration activities by implementing logical structures | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to implement decision logic in code |
|  | 1.b. | Describe how to implement loops logic in code |
|  | 1.c. | Describe how to use functions in scripts |
|  | 1.d. | Identify commands that may be combined to solve problems |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on Conditional Operators (F2F) | | |
|  | Learning Materials | | |
|  | Session #8: Presentation | [S8-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=0cba8a18-2ad3-4d37-9435-7d2db19918a5) |
| 2. | Watch a demonstration on conditional operations through Flowcharts (F2F) | | |
|  | Learning Materials | | |
|  | Session #8: Presentation | [S8-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=0cba8a18-2ad3-4d37-9435-7d2db19918a5) |
| 3. | Watch a demonstration on conditional code in an awk, powershell and bash scripts(F2F) | | |
|  | Learning Materials | | |
|  | Session #8: Presentation | [S8-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=0cba8a18-2ad3-4d37-9435-7d2db19918a5) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #8: Questions | Q8-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a Windows batch file, bash script and PowerShell script that all create a file based upon user input. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #8: Labs - Rubrics | [L8-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=46b5470d-8835-40de-8a4a-636f8fb2ab7a) |
| 3. | Complete Lab B-Create a PowerShell script that creates a menu that runs four different utilities or programs of your choice and then refreshes unless the user exits. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #8: Labs - Rubrics | [L8-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=46b5470d-8835-40de-8a4a-636f8fb2ab7a) |

9 - Incorporating Loops

Overview/Purpose

In this lesson, the students will learn to create Loops in: bash, and PowerShell.  The lesson will be built upon a common understanding of repetition logic.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Automate common system administration activities by implementing logical structures | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to implement decision logic in code |
|  | 1.b. | Describe how to implement loops logic in code |
|  | 1.c. | Describe how to use functions in scripts |
|  | 1.d. | Identify commands that may be combined to solve problems |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on looping logic through Flowcharts (F2F) | | |
|  | Learning Materials | | |
|  | Session #9: Presentation | [S9-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5310c45e-c0dd-4963-a7c9-50f6a9f0d4cb) |
| 2. | Watch a demonstration on looping code in a Windows batch file, bash and PowerShell scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #9: Presentation | [S9-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5310c45e-c0dd-4963-a7c9-50f6a9f0d4cb) |
| 3. | Participate in a discussion on utilizing loops in scripting.  (F2F) | | |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #9: Questions | Q9-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a PowerShell and a Bash script that Handles the following information. Enter the number of Detected Intrusions for each day of the previous week. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #9: Labs - Rubrics | [L9-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=323308e3-2721-40ce-bfad-2b4a0043a8fd) |
| 3. | Complete Lab B-Modify both scripts written in Lab A. Both scripts should write out the Highest and Lowest values entered. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #9: Labs - Rubrics | [L9-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=323308e3-2721-40ce-bfad-2b4a0043a8fd) |

10 - Using Built-In Functions

Overview/Purpose

In this lesson, the students will learn to use Built In functions in both PowerShell and Bash Shell will be explored with an emphasis on String manipulation.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Automate common system administration activities by implementing logical structures | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to implement decision logic in code |
|  | 1.b. | Describe how to implement loops logic in code |
|  | 1.c. | Describe how to use functions in scripts |
|  | 1.d. | Identify commands that may be combined to solve problems |
| 2. | Leverage cmdlets to accomplish daily management tasks | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Describe how to manage Processes with cmdlets |
|  | 2.b. | Describe how to manipulate files with cmdlets |
|  | 2.c. | Describe how to manage users with cmdlets |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on awk Built-In functions (F2F) | | |
|  | Learning Materials | | |
|  | Session #10: Presentation | [S10-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=218cd1a2-8cd0-4a1e-8746-c2c6265ada74) |
| 2. | Listen to a lecture on bash Built-In functions (F2F) | | |
|  | Learning Materials | | |
|  | Session #10: Presentation | [S10-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=218cd1a2-8cd0-4a1e-8746-c2c6265ada74) |
| 3. | Watch a demonstration on text manipulation using functions (F2F) | | |
|  | Learning Materials | | |
|  | Session #10: Presentation | [S10-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=218cd1a2-8cd0-4a1e-8746-c2c6265ada74) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #10: Questions | Q10-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A - Create a PowerShell script that: 1. Asks the 3 users to enter their name. 2. Asks the user for the number of steps they walked each day for five days. 3. Using formatted print, write out the name, total steps and average steps and align them with the other lines of output. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #10: Labs - Rubrics | [L10-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=d1352a03-78ba-4aae-aa1c-f68f4931764e) |
| 3. | Complete Lab B-Create a Bash script that performs the same actions as Lab A. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #10: Labs - Rubrics | [L10-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=d1352a03-78ba-4aae-aa1c-f68f4931764e) |

11 - Working with the File System

Overview/Purpose

In this lesson, the students will learn to create scripts in bash, Windows batch file scripting, and PowerShell.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Identify text that matches RegEx patterns | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to write a syntactically correct RegEx |
|  | 1.b. | Describe the proper use of Metacharacters in RegEx |
|  | 1.c. | Identify the situtations that Quantifiers should be used in RegEx |
| 2. | Manipulate the content of files | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will meet expectations when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Describe how to modify text using sed scripts in LINUX |
|  | 2.b. | Identify awk commands and functions to parse files |
|  | 2.c. | Describe how to modify files using PowerShell in Windows |
|  | 2.d. | Match problems with the built-in functions that provide the solution. |
| 3. | Navigate the Linux and Windows File System | |
|  | Assessment Strategies | |
|  | 3.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 3.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 3.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 3.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 3.a. | Describe how to Redirect input and output files |
|  | 3.b. | Describe precisely how the bash command line handles stdin and stdout |
|  | 3.c. | Chain commands using by piping |
|  | 3.d. | Navigate the Linux file structure |
|  | 3.e. | Demonstrate how to modify and manage file permissions |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Watch a demonstration on navigating and managing the Linux file structure in bash scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #11: Presentation | [S11-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=e1b0bc71-3021-4fb3-afd3-34155c0fdf9f) |
| 2. | Participate in a discussion on navigating and managing the Windows file structure in PowerShell scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #11: Presentation | [S11-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=e1b0bc71-3021-4fb3-afd3-34155c0fdf9f) |
| 3. | Listen to a lecture on navigating and managing the Linux file structure in bash scripts. (F2F) | | |
| 4. | Listen to a lecture on navigating and managing the Windows file structure in PowerShell scripts. (F2F) | | |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions. (online) | | |
|  | Learning Materials | | |
|  | Lesson #11: Questions | Q11-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Create a PowerShell script that includes three steps that writes production quality messages to a single log file. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #11: Labs - Rubrics | [L11-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bfdaeca9-09f7-4c76-8071-4412666a59f5) |
| 3. | Complete Lab B-Create a bash shell script that performs the same activities as Lab A. (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #11: Labs - Rubrics | [L11-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bfdaeca9-09f7-4c76-8071-4412666a59f5) |

12 - More PowerShell

Overview/Purpose

In this lesson, the instructor will introduce various ways to format output in PowerShell.

Target Competencies

|  |  |  |
| --- | --- | --- |
| 1. | Leverage cmdlets to accomplish daily management tasks | |
|  | Assessment Strategies | |
|  | 1.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 1.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 1.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 1.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 1.a. | Describe how to manage Processes with cmdlets |
|  | 1.b. | Describe how to manipulate files with cmdlets |
|  | 1.c. | Describe how to manage users with cmdlets |
| 2. | Create reports using PowerShell | |
|  | Assessment Strategies | |
|  | 2.1. | Weekly Multiple-Choice Questions / Quiz (Two attempts) |
|  | 2.2. | In-Class Labs |
|  | Criteria | |
|  | Performance will be satisfactory when: | |
|  | 2.1. | You have answered more than 80% of the questions correctly on the weekly questions. (Two tries) |
|  | 2.2. | You meet the criteria for successful completion of the in-class lab activities. |
|  | Learning Objectives | |
|  | 2.a. | Describe how to format information returned by PowerShell in a variety of styles |
|  | 2.b. | Describe how to produce summary data in a report |

### Learning Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Listen to a lecture on complex cmdlet output (F2F) | | |
|  | Learning Materials | | |
|  | Session #12: Presentation | [S12-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bd35a7b2-12db-4a0a-af62-65c7fddffa4b) |
| 2. | Listen to a lecture on PowerShell tools for formatted print (F2F) | | |
|  | Learning Materials | | |
|  | Session #12: Presentation | [S12-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bd35a7b2-12db-4a0a-af62-65c7fddffa4b) |
| 3. | Participate in a discussion on the techniques for handling errors in scripts (F2F) | | |
|  | Learning Materials | | |
|  | Session #12: Presentation | [S12-Shell-Scripting.pptx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=bd35a7b2-12db-4a0a-af62-65c7fddffa4b) |

### Assessment Activities

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Complete multiple-choice questions (online) | | |
|  | Learning Materials | | |
|  | Lesson #12: Questions | Q12-Shell-Scripting.docx (Hyperlink removed. Document in Embargo) |
| 2. | Complete Lab A-Identify five Cmdlets that create a useful object that has multiple properties that may be sorted, selected, and grouped. These may not include Get-ChildItem. The command along with the other commands that the objects are piped to must be demonstrated to the Instructor.  (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #12: Labs - Rubrics | [L12-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5a696ffd-8b83-447e-a7e1-c17dc819c83a) |
| 3. | Complete Lab B-Identify three additional Cmdlets that create a useful object that has multiple properties that is useful for the GridView. Demonstrate and describe the value to the instructor.  (F2F) | | |
|  | Learning Materials | | |
|  | Lesson #12: Labs - Rubrics | [L12-Shell-Scripting.docx](https://wctc.wids.org//PublicDocuments.axd?DocumentID=5a696ffd-8b83-447e-a7e1-c17dc819c83a) |

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