Environment Variable and Set-UID Program Lab

Overview: The purpose of this lab was to understand, and be able to control environment variables to affect program and system behaviors. This also aided in describing the vulnerabilities that can be exploited by abusing environment variables.

Tasks:

Task 1: Manipulating Environment Variables

Purpose: Be able to print, and set environment variables.

Step 1: Use “env” to print the environment variables.

Step 2: Use “export” to set an environment variable.

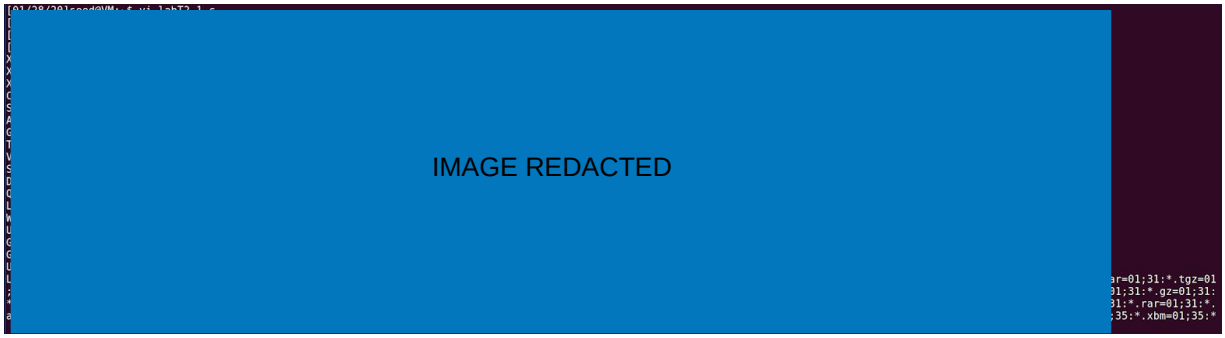
Observations & Conclusion: The environment variables are easily accessed through bash, and can be set using the “export” command.

Task 2: Passing Environment Variables from Parent Process to Child Process

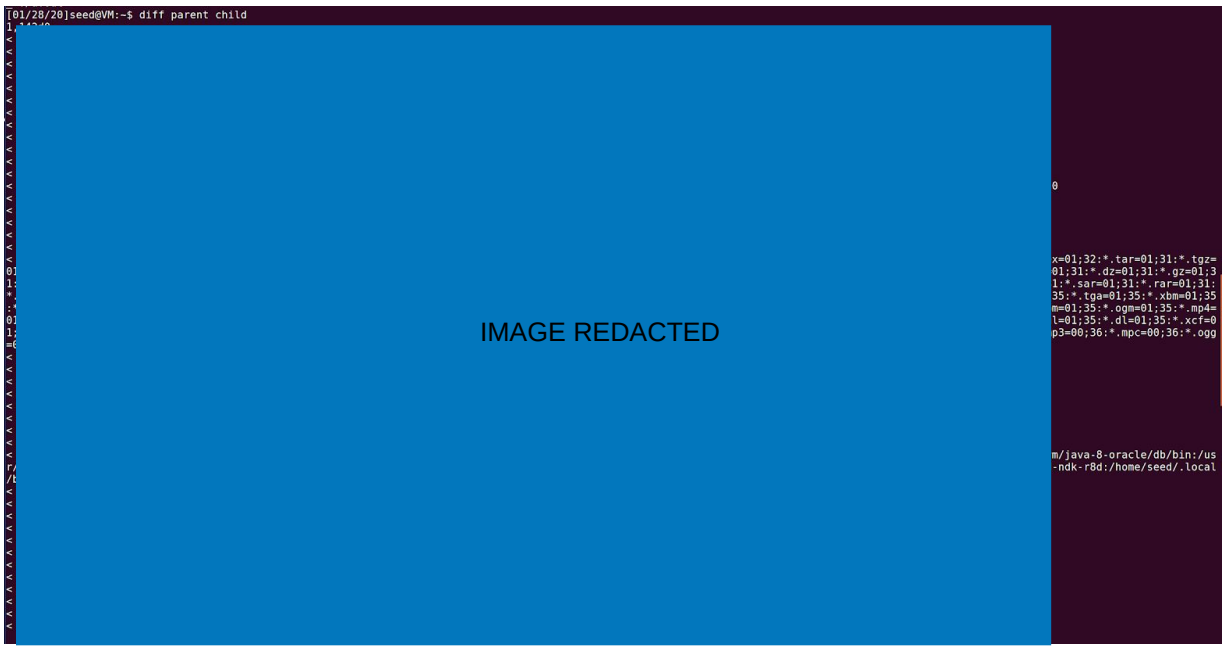
Step 1: The given code is compiled, and ran. The code Solution REDACTED

Step 2: The given code is compiled, and ran. The code prints the environment variables of the **parent** process. The output of this is saved to a file. The output is the environment variables of

the parent process.



Step 3: The differences between the printouts of the child environment variables, and the parent environment variables are compared.



Observations & Conclusion:

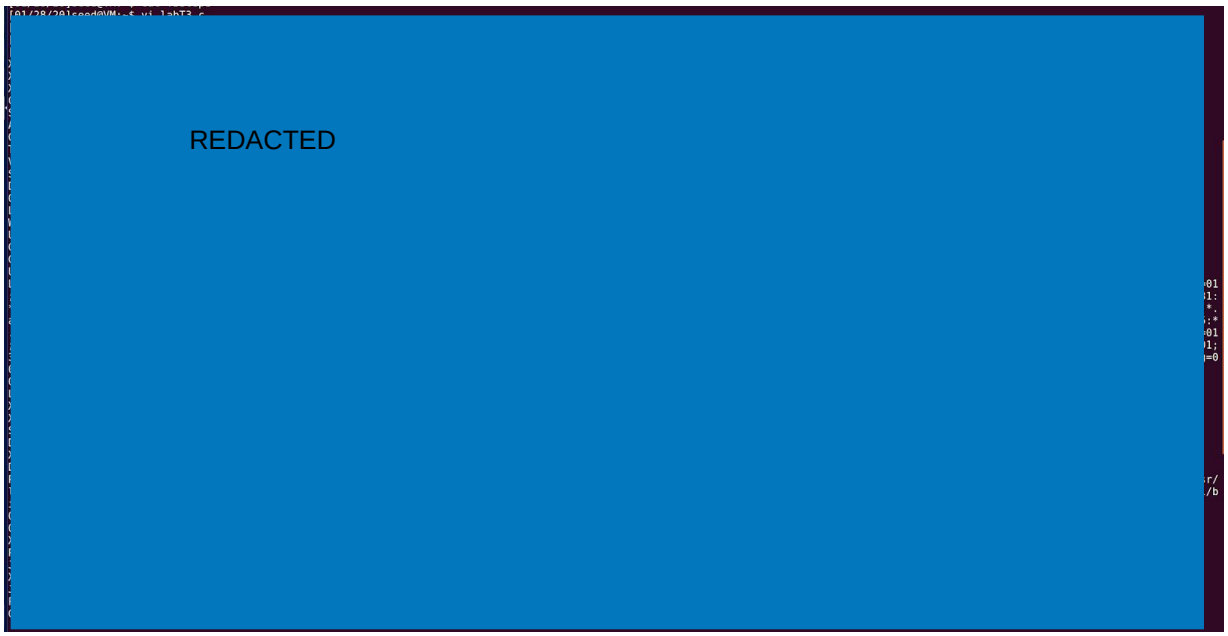
Observation and conclusion REDACTED

Task 3: Environment Variables and execve()

Description REDACTED

Step 1: The given code is compiled, and ran. The code REDACTED

Step 2: We modified the execve statement to be: **execve("/usr/bin/env", argv, environ).** Since we passed in the environ argument this time, REDACTED



Observations & Conclusion:

REDACTED

Task 4: Environment Variables and system()

Purpose: Understand how environment variables are affected when using system(). This is unlike execve(), because it requests the shell to execute the command. This will hopefully show us that system() is a lot sketchier than execve(). (Purpose is not needed, but it does improve the quality of the report)

Step 1: Compile and run the given code. This calls the “env” command using system, and outputs the list of environment variables.

(End of example lab report format)