

Motivation

The practical aspects of security are increasingly important when it comes to providing a well-rounded education in this space. Pre-built environments in which students can try out security attacks in a well-defined and safe manner are a critical component of this approach.

To this end, we created **PwnMe 1.0**, a custom virtual machine with a set of selected misconfigurations in a CTF (Capture The Flag) style which allows students to put their hacking skills in practice.

Pedagogical Aspects

Application of teamwork is often forgotten when the topic is computer science. Nevertheless it is a crucial and a well-known approach when the need for solving complex problems arises.

For CTF in general, being able to communicate with team members and sharing knowledge is one of the most important parts in solving a given problem. Furthermore, this form of sharing and comparing, helps students sharpen both their technical and communication skills.

PwnMe 1.0 aims at being a lab long enough and sufficiently complex to be a good starting point for anyone interested in the security field in general. The exercise contains a little bit of everything from network security to system security, cryptography, and poor permission decisions.

Users and flags

Various users with different roles are implemented in this CTF in a way that the difficulty level increases after a task is solved and a flag gained.

Personalization

Every flag in the system is created at first boot and it is based on a hash function which creates unique flags for each team.

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##### Welcome to PwnMe 1.0 by #m0mb3r #####
Hi traveller, to initialize the system I need to know your team name.
The team name must be a single string of alphabetical characters.
Please avoid special symbols or it may affect the configurations and flag rewards :)
Enter your team name:
  
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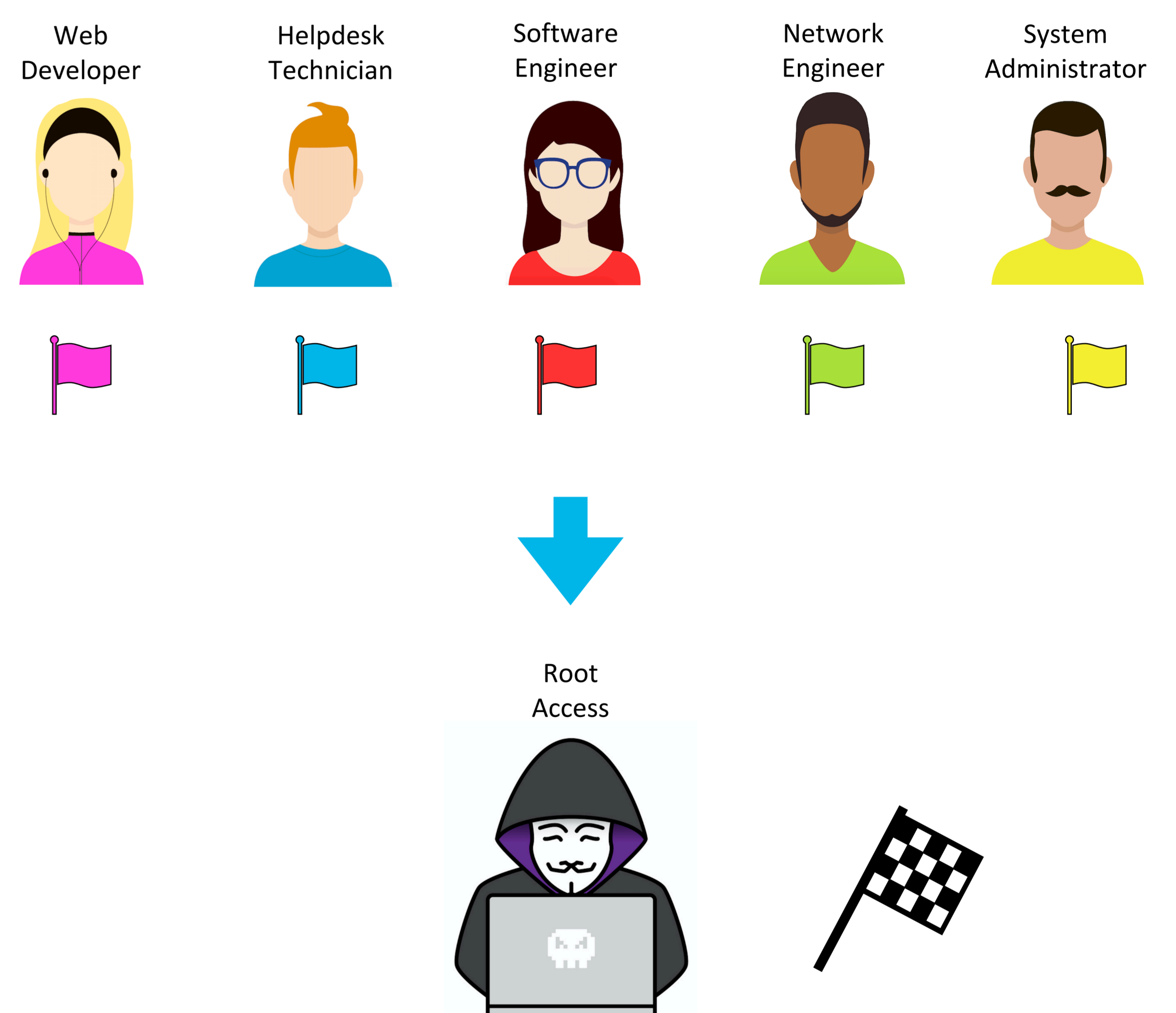
PwnMe 1.0 was made with love by #m0mb3r
VM is ready to be hacked by team: jast
IP Address of your target: 192.168.56.101
  
```

Vulnerabilities

Vulnerabilities in general can be grouped in different macro groups such as:

- Web
- System
- Software
- Cryptographic
- General misconfigurations

PwnMe implements vulnerabilities of all those groups in a way that students can gain knowledge by understanding the given problems and solving ad-hoc tasks.



Challenges

Students are given a sequence of challenges in increasing order of difficulty. To be able to continue in the given hacking journey they will need to solve them one after the other.

Grading

A script which reads the students' solutions and grades them accordingly is given to the instructors and can be used to automatically grade all the submissions.