

Topic

You will be choosing the topic for your own project. However, whatever topic you choose must be:

- Practical – this is not a paper-based exercise, you should be actually creating, developing, experimenting with, or producing something
- Technical in nature – it has to be something related to cyber (system, network, etc.), electronics, or other technology
- Something new – you cannot reuse a project from another class
- Original – you can't simply rewrite software from a repository (like a keystroke logger) and use that as your work
 - This has been attempted in previous classes
 - You will be given a zero for the milestone it is discovered, and for earlier milestones if that is warranted. You will not be allowed to make up the zero.
 - Extending a project found on Github (or other repository) to add significant functionality may be acceptable
- Legal and ethical – no hacking coffee shops, neighbors, or attacking any system you are not the owner of
- Related to cybersecurity
 - This is optional with the approval of the instructor
 - If your project is not related to cybersecurity, the technical requirements for the work will need to be higher

Some previous topics:

- Controlling a Smart TV from a Linux laptop via their API calls
- Controlling a smart lamp by crafting custom network packets
- Setting up a penetration testing environment in AWS (including identifying the AWS rules that applied to that environment)
- Malware testing on a Raspberry Pi
- Modifying Linux to allow the use of smart badges for authentication that met Department of Defense standards
- Integrating automated data retrieval, database storage, analysis, and visualization of publicly available datasets.

Milestones

Instead of having you submit an “outline”, “rough draft”, and then a “final draft”, the deliverables for your project will be split into 5 milestones, with each milestone due every 1-2 weeks based on the semester schedule.

These milestones will be defined by you, and you will be graded against meeting your own milestones.

However, this does not mean you can turn in whatever you want for each milestone – **each milestone must represent an appropriate amount of work given the weight of the project for the overall course.**

Here is an example:

If your first milestone is “Complete initial design for SecureNetworkToolkit” and you turn in a photo of a hand-drawn diagram that took a few minutes to draw, you will be graded accordingly. For the expected level of effort, you should turn in a diagram that you put together in Visio, draw.io, or other drawing package along with 1-2 paragraphs of text descriptions for each component.

The same will hold if you discover your milestone is actually trivial to implement. So, if you find that someone else already implemented the desired functionality, and all you have to do is import their module and call a function, you will need to add something to your milestone to meet the appropriate amount of work for the milestone.

The deliverable for each milestone is a report that contains the following sections:

- What you did
- What you learned
- Documentation of what you did

Again, the level of detail provided for each component of the milestone should represent an appropriate amount of work. Here is an example using a car analogy:

Not Acceptable: “*What I did:* I changed the oil on my car.”

Acceptable: “*What I did:* I changed the oil on my car. The first step in doing this required me to get 6 quarts of SAE 5w-20 oil, which is recommended for my vehicle in the owner's manual. Once I got the oil from my local auto store, I went to a hobbyist garage where I could access a hydraulic lift to allow access to the underside of my vehicle to access the oil drain plug. Given the location of the oil drain, some care must be taken to avoid getting oil on other engine parts - which results in an oil smell when it burns off the engine when it gets hot. In addition, if the engine is running excessively hot because it is being used as a high-performance vehicle (i.e. – Taking it to a track) there is a small chance the oil will actually ignite and cause an engine fire. Therefore, to avoid this risk, I used a clamp to hold the funnel underneath the oil drain... etc.”

Project Proposal Assignment

Deliverables

For this assignment, you will submit a PDF or Word document that contains 1-3 project topics/ideas, and a project plan for each idea that breaks the overall work into the 5 milestones. Each idea should include:

- A short description of the project topic or idea (50-100 words)
- A description of each Milestone for this idea (25-50 words each)