Execute!

This module is designed to help you explore how programming affects everyday life.

1. Choose A or B or C and complete ALL the requirements.
   A. Watch three hours total of shows or documentaries related to programming, robotics, the Internet, networking, social media and digital freedom, cyber security, electronics. Then do the following:
      1. Make a list of at least five questions or ideas from the shows you watched.
      2. Discuss two of the questions or ideas with your counselor that relate to programming and other computer topics.
   B. Read (not less than three hours total) about anything related to programming, robotics, the Internet, networking, social media and digital freedom, cyber security, electronics.
      1. Make a list of at least five questions or ideas from the material you read.
      2. Discuss two of the questions or ideas with your counselor that relate to programming and other computer topics.
   C. Do a combination of reading and watching (not less than three hours). Then do the following:
      1. Make a list of at least five questions or ideas from the material you read.
      2. Discuss two of the questions or ideas that relate to programming and other computer topics with your counselor.

2. Choose ONE STEM field of interest from the following list. Complete ALL the requirements for a Venturing STEM exploration (see separate document) in that field. (If you have already completed a Venturing STEM Exploration in one of these fields, please choose a different field for this award.)

Computer Hardware	Electronics	Programming
Cryptology	Information Technology	Robotics
Cybersecurity	Networking	Social Media Marketing

3. Experiment! Choose three activities from the following list and complete ALL the requirements.
    A. Build an app.
        1. Create an app that helps solve a problem of your choosing. You can use a development environment of your choosing. Some common software applications include:
            a. https://squeak.org/ (Smalltalk)
            b. Liberty Basic or the free Just Basic
            c. Free Basic
            d. Free Pascal
            e. Active State (Perl, Python, Ruby, Lua, TCL, Go)
            f. Java and NetBeans IDE
        2. With your counselor, discuss what aspects of your app make it easy for users to use. Discuss what modifications could be made to make the app better and easier to use.
        3. Show your app to your counselor and explain how you created it.
    B. Investigate a new object-oriented programming language.
        1. Use an online program for learning programming to study a language of your choice. An example of such a language is Scratch or JavaScript or Squeak.
        2. After experimenting with the language, create a mini-video or game that encourages potential new members to join Venturing/Sea Scouting or tells the story of your favorite Scouting memory.
        3. Show your program to your counselor and describe how you made it.
    C. Create a page in HTML.
        1. Take on online course to learn about HTML.
        2. After taking the course, create a basic HTML page for your crew or ship.
        3. Show your HTML page to your counselor and explain how you created it.
    D. Find an old cellphone, computer, or other digital electronic and take it apart (ask your parents or guardians for permission first!).
        1. Identify three pieces to research.
        2. Figure out what they do and how they contribute to the machine.
        3. Report your findings to your counselor.
    E. Investigate how the internet works.
        1. Do some research and describe the history of the internet, its original purpose, and the technical information about how your device uses the internet.
        2. Find out how do search engines work. Research how large databases, like Google and Bing, manage and distribute their data to internet users.
        3. Share your research and timeline with your counselor.
    F. Research the importance of cybersecurity.
        1. Create a poster or presentation describing the types of malicious computer attacks, at least six common cyber and physical attacks, and how to prevent cyber-attacks.
        2. Share your poster with your crew or ship.
        3. Explain the importance of cybersecurity with your counselor.

G. Research the Agile Design Process.
1. With a group of friends, use the skills that you learned to build a tower of plastic cups as tall possible without human or other external support.
2. Agile Design = Build/Code, Test, Assess, Return to Code or Deliver; students learn the importance of testing to make sure their tower will stand in small increments instead of waiting until the end to let it go)

H. Investigate the components of Digital Citizenship.
1. Locate reputable websites to cultivate a list of practices that show healthy digital citizenship.
2. Make a public service video that helps make others aware of good digital citizenship.
3. Share your video with your crew/ship and counselor.

4. Visit and Meet! Choose ONE option and interview a person involved with the field. If possible, visit them in that environment and see what they do. Write down at least five questions to ask and share what you learn with your counselor.
A. Local gaming or programming company
B. Computer Science/Engineering department at a local university
C. Professionals within the fields of programming, computer science, cybersecurity, or information technology
D. A Hackathon or Robotics competition

5. Discuss with your counselor how programming affects your everyday life, and what you have learned by working on this Nova.