

# PROJECT DESIGN: OVERVIEW

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<b>Name of Project</b>	Can you crack it?			<b>Duration:</b> 15-30 contact hours		
<b>Subject/Course</b>	* Career Technical Education -> Information Technology	<b>Teacher(s):</b> N. Fullerton			<b>Grade Level:</b> 11th	
<b>Other subject areas to be included, if any</b>	Computer Science, Business/Entrepreneurship					
<b>Significant Content</b> (CCSS and/or others)	1.4 Develop an appreciation of computer science related topics, including cyber security. 2.1 Creativity and problem solving skills during project work. 3.1 The use of input and output data and variables. 3.2 The use of loops 3.3 The use of conditional statements 3.4 The use of abstraction in code. 3.6 An ability to provide accompanying documentation.					
<b>21st Century Competencies</b> (to be taught and assessed)	Collaboration	<input checked="" type="checkbox"/>	Communication	<input type="checkbox"/>	Critical Thinking	<input checked="" type="checkbox"/>
	Creativity and Innovation	<input checked="" type="checkbox"/>	Other :	<input type="checkbox"/>		
<b>Project Summary</b> (include student role, issue, problem or challenge, action taken, and purpose/beneficiary)	Students will be placed in groups based on their multiple intelligence's assessment (varied strengths in each group). Students will be presented with an encrypted message (employing a simple Caesar Cipher of all characters on the keyboard) and asked to create a program to brute force it. Students will be asked to begin a cyber security company that provides an encryption service (possibly for SMS). Students will explore the driving question and be asked to develop and present a program that is capable of encrypting / decrypting a message that will be tested by and authentic audience.					
<b>Driving Question</b>	How might encryption become unbreakable?					
<b>Entry Event</b>	A short video on cryptography (exciting). Students will be presented with an encrypted message and given a code breaker's wheel as a tool to assist in deciphering the message (letters only). Having completed multiple intelligence surveys students will be placed in groups and asked to begin by deciding on a name for their company. They should then attempt to decipher the message.					
<b>Products</b>	<b>Individual</b> Brute forcing program, Daily programming experience (Rubric), Journal of research, Learning/Practice tasks		<b>Specific content and competencies to be assessed:</b> S.C.O. 3.4 The use of abstraction in code. S.C.O. 3.6 An ability to provide accompanying documentation.			
	<b>Team</b> Working company program (Rubric), Advertisement for product (Multimedia), Pitch for Dragon's Den (Presentation)		<b>Specific content and competencies to be assessed:</b> S.C.O. 1.4 Develop an appreciation of computer science related topics, including cyber security. S.C.O. 2.1 Creativity and problem solving skills during project work.			

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### Public Audience

(Experts, audiences, or product users students will engage with during/at end of project)

Cyber security professionals brought in to view final pitches by companies. UNB CS department invited in for halfway check and question period. Students requiring enrichment may look at developing an app.

### Resources Needed

**On-site people, facilities:** K. Halas-Moulton, Digital Tech Lab,

**Equipment:** Computers, Video recording/editing equipment,

**Materials:** Pycharm, Python 2.7,

**Community Resources:** UNB CS representatives, Cyber security professionals

### Reflection Methods

(Individual, Team, and/or Whole Class)

Journal/Learning Log



Whole-Class Discussion



Survey



Focus Group



Fishbowl Discussion



Other :



**Notes** Students should consult with the Business / Entrepreneurship class and Digital tech class.