

## Fun with Encryption

### Goals:

1. Practice using c++ strings
2. Practice working on a software development team
3. Algorithm development

### Part 1 (20 points) Due: 10/18 23:59

1. With a teammate, write a c++ program that will allow the user to both encrypt and decrypt a message. The user will choose only one these operations at a time.
2. Encryption
  - a. Get a "message" of any length from the user in the form of a c++ string.
    - i. The message may contain any printable/typeable character. That is, ASCII values 32 – 126. Note: there are 94 characters in this range.
  - b. Get an integer key from the user. Only values in the range 0-94.
  - c. Encrypt the message by adding the key to every character in the c++ string. If when you added the key the character the value is out of the range of letters and numbers, make it wrap back around as shown below.
    - i. Example 1: T -> ASCII of 84 and a key of 90.  $84 + 90 = 174$ . Subtract 94 because 174 is outside the range 32-129.  $174 - 94 = 80$
    - ii. Example 2: T -> ASCII of 84 and a key of 1.  $84 + 1 = 85$
  - d. Display the encrypted message.
3. Decryption
  - a. Get an encrypted message of any length from the user in the form of a c++ string.
  - b. Get an integer key from the user. Only values in the range 0-94.
  - c. Decrypted the message using the opposite process from the encryption instructions.
  - d. Display the decrypted message.

### Part 2 (15 points) **COMPOTITION** Due: 10/19 23:59

1. Create a new encryption algorithm with a teammate.
  - a. The program should provide both encryption and description operations.
  - b. Limit of 5 operations
2. To share with other teams (Place these in comments at top of your code):
  - a. 2 example messages
  - b. 2 example encrypted messages that correspond to the 2 messages
  - c. Any keys necessary (limit of 5 keys)

### Part 3 (Bonus Only, 17 points possible) Due:10/25 23:59 [download here](#)

1. Submit a description of 1 or more encryption algorithms you believe that other teams used.
  - a. Title the description the team number.
  - b. You will get credit for your algorithm description if it works for both example messages. It may or may not be the exact algorithm expected.
2. Bonus Points
  - a. 10 bonus points to winning team – the team that the fewest other teams that solved their encryption algorithm
  - b. 1 bonus point to each encryption algorithm solved

Fall 2016 Teams:

1. Landon Carter – David Gillespie
2. Drake Hill – Colin Knox
3. Degnan Lawrence – Noah Myers
4. Daniel Norwood – Lane O'Bryant
5. Brandon Ormsby – Colin Smith
6. Rebekah Rice – Stephen Stewart
7. Matthew Thompson – Robert Thompson
8. Lydia Sarver – Maggie George