

|                               |            |          |
|-------------------------------|------------|----------|
| <b>What is cryptography ?</b> | Season     | 03       |
|                               | Episode    | 08       |
|                               | Time frame | 1 period |

**Objectives :**

- Introduce the main concepts in cryptography.
- Study an example of encrypted text.

**Materials :**

- *Vocabulary sheet about cryptography.*
- *The Gold Bug cipher.*
- *Beamer*

**1 – Brainstorming about cryptography**

20 mins

Students work in groups to build a mind map about cryptography and if possible give examples of ciphers. Vocabulary is given when asked. Each group must name two reporters who will explain the mind map to the class.

**2 – Presentation of some mind maps**

20 mins

Some group reporters explain their mind maps to the class.

**3 – The Gold Bug cipher**

15 mins

The Gold Bug cipher is presented and students, working in groups, have 15 minutes to try to solve it.

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|-------------------------------|----------|------------------|
| <b>What is cryptography ?</b> | Season   | 03               |
|                               | Episode  | 08               |
|                               | Document | Vocabulary sheet |

**Cryptography** : The practice and study of hiding information.

**Encryption** : The process of obscuring information to make it unreadable without special knowledge, key files, and/or passwords.

**Decryption** : The process reversing an encryption, i.e. the process which converts encrypted data into its original form.

**Cipher** : A method of transforming a text in order to conceal its meaning.

**Code** : A cryptographic system that converts words or phrases into codewords.

**Codeword** : A string representing an encoded piece of text.

**Encode** : To convert a readable text into an unreadable one.

**Plaintext** : Un-encrypted text, text that is readable.

**Ciphertext** : Encoded text, text that is unreadable.

**Cryptanalysis** : An analysis or decrypting of a specific text or a specific code or cipher, or more generally the science of analyzing and breaking of codes and ciphers.

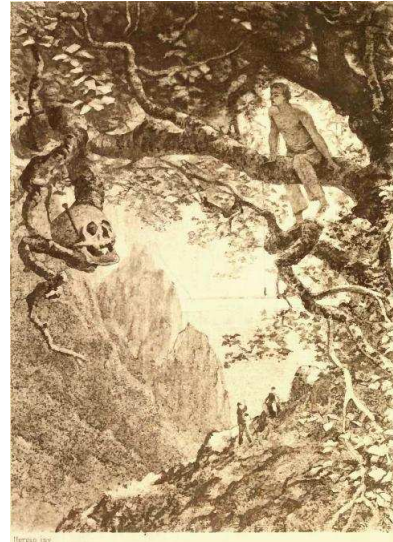
## The Gold Bug cipher

|          |          |
|----------|----------|
| Season   | 03       |
| Episode  | 08       |
| Document | Document |

“The Gold-Bug” is a short story by Edgar Allan Poe, set on Sullivan’s Island, South Carolina involving deciphering a secret message and finding buried treasure.

### Plot summary

“The Gold-Bug” tells the story of a strange man named William Legrand who seemingly goes mad after finding and being bitten by a bug thought to be made of pure gold. He notifies his closest friend, the narrator, telling him to immediately come visit him at his home on Sullivan’s Island in South Carolina. Upon the narrator’s arrival, Legrand informs him that they are embarking upon a search for lost treasure along with his African-American servant Jupiter. The narrator has intense doubt and questions if Legrand has gone insane.



*Illustration for an early edition*

After following several clues, however, they find treasure buried by the infamous pirate “Captain Kidd”, that is estimated by the narrator to be worth about fourteen million dollars. Once the treasure is safely secured, the man goes into an elaborate explanation of how he knew about the treasure’s location, based on a set of occurrences that happened after the discovery of the gold bug.

### Cryptography

The story involves cryptography with a detailed description of a method for solving a simple substitution cipher using letter frequencies. The cryptogram is :

53†††305))6\* ;4826)4†.)4†) ;806\* ;48†8  
\$60))85 ;1†( ; †\*8†83(88)5\*† ;46( ;88\*96  
\* ? ;8)\*†( ;485) ;5\*†2 :\*†( ;4956\*2(5\*-4)8  
\$8\* ;4069285) ;)6†8)4†† ;1(†9 ;48081 ;8 :8†  
1 ;48†85 ;4)485†528806\*81(†9 ;48 ;(88 ;4  
(† ?34 ;48)4† ;161 ; :188 ;† ? ;

*From Wikipedia, the free encyclopedia*