The Gold-Bug – E.A. Poe
E. A. Poe “The father of cryptography”

Circumstances, and a certain biased of mind, have led me to take interest in such riddles, and it may well be doubted whether human ingenuity can construct an enigma of the kind which human ingenuity may not, by proper application, resolve.
What Language?

“In the present case -- indeed in all cases of secret writing -- the first question regards the language of the cipher; for the principles of solution, so far, especially, as the more simple ciphers are concerned, depend upon, and are varied by, the genius of a particular idiom.”
What Language?...

... In general, there is no alternative but experiment (directed by probabilities) of every tongue known to him who attempts the solution, until the true one be attained.

... But for this consideration, I should have begun my attempts with the Spanish and French, as the tongues in which a secret of this kind would most naturally have been written by a pirate of the Spanish main. As it was, I assumed the cryptograph to be English.”
The Gold-bug – the story

Mr. William Legrand, left New Orleans and took residence on Sullivan’s Island, near South Carolina.

His servant was Jupiter, an old negro. He calls Mr. Legrand “Massa Will.”

One day, Massa Will found a bug, a scarabeus, which he believed is totally new.
Jupiter describes the bug in his language:

“...de bug is a gole-bug, solid, ebery bit of him, inside and all, sep him wing – neber feel half so hebby a bug in my life.”

The design on the bug’s back resembled a death’s-head .... And the story continues and they were searching for a big treasure hidden by a famous pirate Captain Kidd.
Captain Kidd’s Code

53||^305))6*;4826)4|.4|)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;?;
Statistics

No division between words

Statistics of the character
8 there are 33.
; there are 26.
4 there are 19.
|) there are 16.
* there are 13.
5 there are 12.
6 there are 11.
^1 there are 8.
0 there are 6.
92 there are 5
:3 there are 4.
? there are 3.
% there are 2.
_ there are 1.
We found our first letter!

In English the letter which most frequently occurs is e.

Afterwards, the succession is:

a o i d h n r s t u y c f g l m w b k p q x z
"Now, in English, the letter which most frequently occurs is e.

Afterwards, the succession runs thus: a o i d h n r s t u y c f g l m w b k p q x z."
Captain Kidd’s Code: 8 is “e”

53||^305)|6*;4826)4|.)4|);806*

;48^8%60)85;1|(;;;;|*8^83(88)5^8

;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;|?;
As our predominant character is 8, we will commence by assuming it as the e of the natural alphabet. To verify the supposition, let us observe if the 8 be seen often in couples --for e is doubled with great frequency in English--in such words, for example, as 'meet,' 'fleece,' 'speed, 'seen,' 'been,' 'agree,' &c.
"Let us assume 8, then, as c. Now, of all words in the language, 'the' is the most usual; let us see, therefore, whether they are not repetitions of any three characters in the same order of collocation, the last of them being 8.
On inspection, we find no less than seven such arrangements, the characters being 48.
We may, therefore, assume that the semicolon represents t, that 4 represents h, and that 8 represents e --the last being now well confirmed. Thus a great step has been taken.
Captain Kidd’s Code:

is t and 4 is h

must be “the” most frequent word
"But, having established a single word, we are enabled to establish a vastly important point; that is to say, several commencements and terminations of other words. Let us refer, for example, to the last instance but one, in which the combination :48 occurs --not far from the end of the cipher. We know that the semicolon immediately ensuing is the commencement of a word, and, of the six characters succeeding this 'the,' we are cognizant of no less than five. Let us set these characters down, thus, by the letters we know them to represent, leaving a space for the unknown--teeth.
"Here we are enabled, at once, to discard the 'th,' as forming no portion of the word commencing with the first t; since, by experiment of the entire alphabet for a letter adapted to the vacancy we perceive that no word can be formed of which this th can be a part. We are thus narrowed into

\[\text{tree}\]

and, going through the alphabet, if necessary, as before, we arrive at the word 'tree,' as the sole possible reading. We thus gain another letter, r, represented by (, with the words 'the tree' in juxtaposition.
"Looking beyond these words, for a short distance, we again see the combination $\lambda 8$, and employ it by way of termination to what immediately precedes. We have thus this arrangement:

the tree $\lambda (+34$ the,

or substituting the natural letters, where known, it reads thus:

the tree thr+$3h$ the.
"Now, if, in place of the unknown characters, we leave blank spaces, or substitute dots, we read thus:

the tree thr...h the,

when the word 'through' makes itself evident at once. But this discovery gives us three new letters, o, u and g, represented by + ? and 3.
"Looking now, narrowly, through the cipher for combinations of known characters, we find, not very far from the beginning, this arrangement,

\[ 83(88, or egree, \]

which, plainly, is the conclusion of the word 'degree,' and gives us another letter, d, represented by !.

"Four letters beyond the word 'degree,' we perceive the combination

\[ :46(;88*. \]
"Translating the known characters, and representing the unknown by dots, as before, we read thus:

\[ \text{th.ree.} \]

an arrangement immediately suggestive of the word 'thirteen,' and again furnishing us with two new characters, \( i \) and \( n \), represented by 6 and *. 

"Referring, now, to the beginning of the cryptograph, we find the combination,

\[ 53++! \].
"Translating, as before, we obtain .good, which assures us that the first letter is A, and that the first two words are 'A good.'
The decoding key

5 represents a

! " d
8 " e
3 " g
4 " h
6 " i
* " n
+ " o
( " r
; " t
The mystery text revealed

It now only remains to give you the full translation of the characters upon the parchment, as unriddled. Here it is:

“A good glass in the bishop's hostel in the devil's seat twenty-one degrees and thirteen minutes northeast and by north main branch seventh limb east side shoot from the left eye of the death's-head a bee line from the tree through the shot fifty feet out.”
The Solution

“A good glass in the bishop’s hostel in the devil’s seat forty-one degrees and thirteen minutes northeast and by north main branch seventh limb east side shoot from the left eye of the death’s head a bee-line from the tree through the shot fifty feet out.”
“’A good glass in the bishop's hostel in the devil's --twenty-one degrees and thirteen minutes -- northeast and by north --main branch seventh limb east side -- shoot from the left eye of the death's-head --a bee-line from the tree through the shot fifty feet out.’’
We estimated the entire contents of the chest, that night, at a million and a half of dollars; and, upon the subsequent disposal of the trinkets and jewels (a few being retained for our own use), it was found that we had greatly undervalued the treasure.
"Dey aint no tin in him, Massa Will, I keep a
tellin on you," here interrupted Jupiter; "de bug
is a goole bug, solid, ebery bit of him, inside and
all, sep him wing --neber feel half so hebby a
bug in my life."
Jupiter’s language

"Why, to speak de troof, massa, him not so berry well as mought be."

Dar! dat's it! --him neber plain of notin --but him berry sick for all dat."

"No, dat he ain't! --he ain't find nowhar --dat's just whar de shoe pinch --my mind is got to be berry hebby bout poor Massa Will."
Alignment/Similarity

Massa Master
Massa- Master
Mass-a Master
Mas-sa Master
The End