Cipher Challenge 9: The ADFGUV Cipher

# Solve the message:

**Message:**

**A loaf of bread

Description automatically generated with medium confidence**

* Review Appendix F of The Code Book
* Download the CC9.cipherkey.xlsx file (for the example)
* Perform the 4 steps in order to produce the cipher text.
* Copy the cipher text into your report.

FXVAVDXXVAAAA FXDXVFDAVXFAD VVXVVFDVFXDVX DDVDDDFDDAXXA AVFFGAGGGFVGX XAVXVXVAGXVVV

# Explain the solution:

* What methods did you use to solve the cipher?

Step 1: Create the Polybius square

Open a new Excel workbook.

In cell A1, type the letters ADFGVX.

In cells A2 through A7, type the letters A through F.

In cells B2 through G7, type the letters A through Z, skipping the letters J and repeating the letters I and V to fill the 36 cells.

The resulting grid represents the Polybius square.

Step 2: Input the plaintext message

In cell A10, type the plaintext message that you want to encrypt.

Ensure that the plaintext message only contains uppercase letters and no spaces or punctuation.

Step 3: Convert the plaintext to ADFGVX

In cell A11, enter the formula =CONCAT(IFERROR(ADDRESS(MATCH(MID(A10,ROW($1:$99),1),B$2:G$7,0),1,1),""),IFERROR(ADDRESS(MATCH(MID(A10,ROW($1:$99),1),B$2:G$7,0),1,0),"")) and press Enter.

This formula uses the MATCH function to find the row and column of each letter in the Polybius square, and then returns the corresponding ADFGVX code for each letter.

The resulting cell A11 will display the encrypted message in ADFGVX format.

Step 4: Transpose the ADFGVX code

In cell A12, enter the formula =TEXTJOIN("",TRUE,INDEX(A11,0,SEQUENCE(LEN(A11)))) and press Enter.

This formula uses the INDEX function to transpose the ADFGVX code from rows to columns, and then the TEXTJOIN function to concatenate the transposed code into a single string.

The resulting cell A12 will display the encrypted message in transposed ADFGVX format.

* How long did it take to produce the cipher text?

**Abount 10 mins**

# Historical points or issues found:

What are some of the historical points or issues surrounding this cipher?

The ADFGVX cipher was developed by a German officer named Fritz Nebel in 1918 during World War I, and was used by the German army to encrypt their communications. Some historical points and issues surrounding this cipher are:

Complexity: The ADFGVX cipher was a highly complex cipher for its time, and its use by the German army made it difficult for the Allies to decrypt their messages.

Use of radio communications: The ADFGVX cipher was primarily used for radio communications, which made it vulnerable to interception by the Allies who were able to locate and intercept German radio transmissions.