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class HillCipher {
  // Generate key matrix from key string
  static void getKeyMatrix(String key, int[][] keyMatrix) {
    for (int i = 0, k = 0; i < 3; i++) {
      for (int j = 0; j < 3; j++, k++) {
        keyMatrix[i][j] = key.charAt(k) % 65;
   }
  // Encrypt the message using the key matrix
  static void encrypt(int[][] keyMatrix, int[][] messageVector, int[][] cipherMatrix) {
    for (int i = 0; i < 3; i++) {
      cipherMatrix[i][0] = 0;
      for (int j = 0; j < 3; j++) {
        cipherMatrix[i][0] += keyMatrix[i][j] * messageVector[j][0];
      cipherMatrix[i][0] %= 26;
  // Main Hill Cipher encryption logic
  static void HillCipher(String message, String key) {
    int[][] keyMatrix = new int[3][3];
    getKeyMatrix(key, keyMatrix);
    int[][] messageVector = new int[3][1];
    for (int i = 0; i < 3; i++) {
      messageVector[i][0] = message.charAt(i) % 65;
    }
    int[][] cipherMatrix = new int[3][1];
    encrypt(keyMatrix, messageVector, cipherMatrix);
    StringBuilder cipherText = new StringBuilder();
    for (int i = 0; i < 3; i++) {
      cipherText.append((char) (cipherMatrix[i][0] + 65));
    System.out.println("Ciphertext: " + cipherText);
  public static void main(String[] args) {
    String message = "ACT";
    String key = "GYBNQKURP";
    HillCipher(message, key);
}
```