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1. Describe step by step how you can decrypt a message using the Bifid cipher.
2. Use the Bifid cipher with the tableau as given to
    a. encrypt BRING ALL YOUR MONEY
    b. decrypt PDRRNGBENOPNIAGGF
3. In teams, create the pseudo-code to implement the Bifid cipher. This including message encryption and decryption.
4. When all the team members agree on the previous point, implement your pseudo-code in the programming language all members agree.

NOTE: The submission of this file with the corresponding answers is individual. For questions 3 and 4 you should submit your code (source file) with the team member's names.

1: To decrypt a message first we must have the key and construct the tableau. Then we create an empty array an iterate through each character of the message that we want to decrypt. For each character we are going to append to the array the i coordinate and then the j coordinate.Then we start building the plain message using the resulting array iterating from the start to the middle of the array. We are going to be getting the coordinates of the current value of [index, index + (length / 2)] and the character that is in the tableau is added to the result. We repeat that step until we reach the middle of the array as mentioned before.

2:
Encrypt BRING ALL YOUR MONEY

B	R	I	N	G		A	L	L		Y	O	U	R		M	O	N	E	Y
1	0	2	0	2		1	3	3		0	3	4	0		3	3	0	0	0
3	3	3	1	1		2	0	0		4	2	0	3		1	2	1	0	4

1 0	2 0	2 1	3 3	0 3	4 0	3 3	0 0	0 3	3 3	1 1	2 0	0 4	2 0	3 1	2 1	0 4
P	F	G	Q	R	U	Q	E	R	Q	T	F	Y	F	M	G	Y

The ciphertext is thus "PFGQRUQERQTFYFMGY"
decrypt PDRRNGBENOPNIAGGF

1 0	1 4	0 3	0 3	0 1	2 1	1 3	0 0	0 1	3 2	1 0	0 1	2 3	1 2	2 1	2 1	2 0
P	D	R	R	N	G	B	E	N	O	P	N	I	A	G	G	F

1 1	0 3	1 2	4 1	0 0	3 0	0 1	3 2	0 3	1 1	2 2	1 2	1 1	3 2	0 1	0 2	0 0
T	R	A	V	E	L	N	O	R	T	H	A	T	O	N	C	E

The decrypted text is thus “TRAVELNORTHATONCE”

3:

Before encrypting or decrypting we first build a 5x5 matrix using the key

To build matrix

```
    create empty matrix of 5x5
    for each letter in the key
        add it to the matrix
    for each letter in the alphabet
        If it is not in the matrix
            Add it to the matrix
```

To encrypt

```
    Create empty list
    Create a string variable that is empty
    for each word in the message we want to cipher
        for each character in the word
            add the first coordinate of the character to the list
    for each word in the message we want to cipher
        for each character in the word
            add the second coordinate of the character to the list
    i = 0
    while i < length of the list
        get the coordinates of list[i] and list[i+1]
        get the character with the corresponding coordinates in the matrix
        add the character to the string variable
        i = i + 2
    return the string variable
```

To decrypt

```
    create empty list
    create a string variable that is empty
```

```
for each character in the ciphered message
    add the first coordinate of the character to the list
    add the second coordinate of the character to the list

i = 0
while i < (length of the list) / 2
    get the coordinates of list[i] and list[i + (length of the list) / 2]
    get the character with the corresponding coordinates in the matrix
    add the character to the string variable
    i = i + 1
return the string variable
```