

1. Answers:

a. Linear index =  $2 * 6 * 8 * 5 + 3 * 8 * 5 + 1 * 5 + 4 = 609$

b.  $i = 277 // (6 * 8 * 5) = 1$

$j = (277 \% (6 * 8 * 5)) // (8 * 5) = 37 // (8 * 5) = 0$

$k = (277 \% (8 * 5)) // 5 = 37 // 5 = 7$

$l = 277 \% 5 = 2$

Answer: A[1][0][7][2]

2. Python Code:

```
def rotate_even(arr):
    temp = arr[0]
    for i in range(0, len(arr) - 1, 2):
        arr[i] = arr[i + 2]
    arr[len(arr) - 1] = temp
    return arr
```

Java Code:

```
public static int[] rotate_even(int[] arr){
    int temp = arr[0];
    for(int i = 0; i < arr.length - 1; i += 2){
        arr[i] = arr[i + 2];
    }
    arr[arr.length - 1] = temp;
    return arr;
}
```

3. Python Code:

```
def diagonal_reverse(mat):
    n = len(mat)
    for i in range(n // 2):
        mat[i][i], mat[n-i-1][n-i-1] = mat[n-i-1][n-i-1], mat[i][i]
        mat[i][n-i-1], mat[n-i-1][i] = mat[n-i-1][i], mat[i][n-i-1]
    return mat
```

Java Code:

```
public static int[][] diagonal_reverse(int[][] mat){
    int n = mat.length;
    for(int i = 0; i < n / 2; i++){
        int temp = mat[i][i];
        mat[i][i] = mat[n - i - 1][n - i - 1];
        mat[n - i - 1][n - i - 1] = temp;

        temp = mat[i][n - i - 1];
        mat[i][n - i - 1] = mat[n - i - 1][i];
        mat[n - i - 1][i] = temp;
    }
    return mat;
}
```