Question 1.  [3 marks]

Write the body of the following function according to its docstring description.

```python
def divisible_by_three(L):
    """ (list of int) -> bool

    Return True iff at least one item in L can be divided evenly by 3.
    """
    for item in L:
        if item % 3 == 0:
            return True
    return False
```

Question 2.  [2 marks]

Complete the example function calls by adding arguments that result in the return values shown. (For each example call, there are several correct answers, and providing any one of them will earn full marks.)

```python
def mystery(L):
    """ (list of list of int) -> list of int

    >>> # One inner list with first item 0.
    >>> mystery([[9]])
    [9, 9]
    >>> # Three inner lists with first items 2, 5, and 8, respectively.
    >>> mystery([[2], [5], [8]])
    [2, 5, 8]
    """
    result = []
    for item in L:
        result.append(item[0])
    return result
```
**Question 3.**  [4 MARKS]

Read the function header and body and then complete the docstring. Give a meaningful function name, the type contract, the description, and two examples that return different values.

```python
def left_shifted_by_one(s1, s2):
    """ (str, str) -> bool

    Precondition: len(s2) == len(s1) and s1.isdigit() and s2.isdigit()

    Return True iff s2 is the circular left-shifted version of s1 by one.
    
    >>> left_shifted_by_one("193959", "939591")
    True
    >>> left_shifted_by_one("123", "233")
    False
    """

    i = 0
    flag = True

    for ch in s1:
        ch2 = s2[i - 1]
        if ch != ch2:
            flag = False
            i = i + 1

    return flag
```
Question 4.  [4 MARKS]

Write the body of the following function according to its docstring description.

```python
def ontario_area(area_codes):
    """ (list of int) -> NoneType

    Replace each number in area_codes with its corresponding area name: "Toronto", "Ottawa", or 'Other'. Area codes 416 and 647 belong to 'Toronto', and area codes 343 and 613 belong to 'Ottawa'. All other area codes belong to area 'Other'.

    >>> area_codes = [500, 416, 647, 613]
    >>> ontario_area(area_codes)
    >>> area_codes
    ['Other', 'Toronto', 'Toronto', 'Ottawa']
    ""

    for i in range(len(area_codes)):
        if area_codes[i] == 416 or area_codes[i] == 647:
            area_codes[i] = 'Toronto'
        elif area_codes[i] == 343 or area_codes[i] == 613:
            area_codes[i] = 'Ottawa'
        else:
            area_codes[i] = 'Other'
```
Question 5. [5 marks]

Write the body of the following function according to its docstring description.

```python
def encode(message, encodings):
    """ (str, list of str) -> int

    Preconditions:
    - len(message) >= 1 and len(encodings) >= 1
    - each string in encodings has length 2
    - every character in message appears as the first character in exactly
      one of the encoding strings.
    - the second character in each encoding string is a character in the
      range '1' to '9'.

    Based on the information in encodings, convert each character in message
    to a digit and return those digits all together as a single integer.

    >>> encode('g', ['a1', 'h2', 'g3', 'j4', 'y5', 'n6'])
    3
    >>> encode('code', ['e1', 'c2', 'p3', 'd4', 'o5', 'n6'])
    2541
    """

    encoded = ''
    for letter in message:
        for encoding in encodings:
            if letter == encoding[0]:
                encoded += encoding[1]
    return int(encoded)
```