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import itertools
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#Problem 3

def P3():
    s = "12345"
    count = 0
    for item in itertools.product(s, repeat=9):
        # If we start on the bottom left corner, we'll always finish in the bottom
right corner
        if(item[0] == '1' and item[-1] == '2'):
            # Because we always finish in '2', one of the combinations for it
(('1','2'), ('3','2'), ('5', '2')) will
            # happen twice. We won't count for it because it can be either one of
them (and to compensate, we already are
            # only checking for cases ending in '2').
            all_lines = [('1', '2'), ('1','3'), ('1', '5'), ('3', '2'), ('4', '3'),
('5','2'), ('5', '3'), ('5', '4')]
            for j in range(len(item)-2):
                if (item[j], item[j+1]) in all_lines:
                    all_lines.remove((item[j], item[j+1]))
                elif (item[j+1], item[j]) in all_lines:
                    all_lines.remove((item[j+1], item[j]))

            # We are not checking the last line because we alredy knows where it
ends <==> Always one element remaining
            if len(all_lines) == 1:
                output = ""
                print(output.join(item))

                # If you want to see what I mean with my explanation, uncomment
this line.
                #print(output.join(item), all_lines)
                count += 1
    #print(count)

P3()
```