

```

1
2 def run(primes: list) -> dict:
3     """
4     Returns a dict of all Germain Prime sequences identified in the given list
5     """
6
7     # dict for storing results
8     sequences = dict()
9
10    # building set of primes of O(1) checking
11    primeSet = set(primes)
12
13    # iterating through all primes in given list
14    for prime in primes:
15
16        # list for storing the current sequence achieved
17        seq = list()
18
19        # assigning the first prime to check as the current prime in the given list of primes
20        gt = prime
21
22        # checking that gt is Germain, and if so, adding to sequence and updating gt
23        while (gt * 2) + 1 in primeSet:
24            seq.append(gt)
25
26            gt = (gt * 2) + 1
27
28        # if the seq variable is not empty, meaning at least one Germain prime was identified, it gets added
29        # to results
30        if seq:
31            sequences[prime] = {"sequence": seq, "length": len(seq)}
32
33    # returning the results
34    return sequences
35

```

Algorithm to identify sequences of Germain primes.

Let p be a prime number.

p is a Germain Prime if $2p + 1$ is also prime.