

Following are the questions:

Q#1

Check whether a given array is an Onion Array. Return 1 if true or 0 if false. The conditions for becoming an Onion Array are for every j and k , $j \geq 0$, $k \geq 0$, $j+k+1 = \text{array length}$, and $a[j] + a[k] \leq 10$. If a condition is not satisfied anywhere loop cycle should not be wasted.

Examples:

Integer Array	Return	Reason
{}	1	As there are no elements that do not satisfy the conditions
{7}	1	As there are no more elements that do not satisfy the conditions
{3,6}	1	$3+6 \leq 10$
{2,6,1,5,8}	0	Although $2+8 \leq 10$, but $6+5$ is not ≤ 10
{3,9,4,1,5,1,0}	1	$3+0 \leq 10$, $9+1 \leq 10$, and $4+5 \leq 10$

Function declaration is `int isOnionArray (int n)`.

Q#2

Check whether a given integer number, n , is Prime Happy. Return 1 if true or 0 if false. A Prime Happy number is a number, n , which has at least one prime number less than n and the sum of all prime numbers less than n is divisible by n .

The prime number > 1 .

Integer	Return	Reason
3	0	2 is the only one prime less than 3, but the sum, 2 is not divisible by 3
5	1	2 and 3 are the prime numbers less than 5, and their sum, 5 is divisible by 5
8	0	2, 3, 5, and 7 are the prime numbers less than 8, but their sum, 17 is not divisible by 8

Function declaration is `int isPrimeHappy (int n)`.

Q#3

Encode a given integer with zeros and ones. Return an integer Encode Array.

Examples:

Integer	Return	Reason
0	{1}	No zero; only one '1'
1	{0,1}	One '0' and one '1'
2	{0,0,1}	Two '0' and one '1'
3	{0,0,0,1}	Three '0' and one '1'
-1	{-1,0,1}	One '-1', No zero; only one '1'
-5	{-1,0,0,0,0.01}	One '-1', five '0', and one '1'
25	{0,0,1,0,0,0,0.01}	Combination of for '2' and '5'
-25	{-1,0,0,1,0,0,0,0.01}	Same as above, but start with '-1' for the negative
-253	{-1,0,0,0,0.01,0,0,0,1}	Same as above and append {0,0,0,1}

Function declaration is `int [] encodeArray (int n)`.

The hint was goes like:

1. Use of modulo 10,
2. Make a forward pass to determine the size of array,
3. Make another pass to populate 1s, and
4. Make again another pass to populate the other indexes.

However, I did not use separate passes to do bullet nos. 3 and 4. I did them within one pass only.