FIZ 425E PYTHON

QUIZ 4

1.

Write a code to do:
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Main program:

- Ask the user to enter a positive integer number.

- If the number is less than or equal to 1, write "The number can be at least two." to the screen,

- If the number is greater than 1:

-- Test if the number is a prime number or not using the function "**isitprime**".

--- If it is prime, write the following to the screen:
    the number, "is prime and the Mersenne number associated with it is" the Mersenne number
    e.g. "2 is a prime number and the Mersenne number associated with it is 3"

--- If it is not a prime number, write the following to the screen:
    "The number you have entered is not a prime number."

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Function "**isitprime**":

- Input: The number *x*

- Find if *x* is a prime number using the modulo operator (%).

(-Start dividing *x* by integer numbers from *2* to *n-1*. If they are all nonzero, then *x* is a prime number.)

- Find the Mersenne number associated with *x* if it is prime using the function "**mersenne**"

- Outputs:

i. 1 if the number is prime, 0 if it is not.
ii. The Mersenne number if x is prime, 0 if x is not a prime number.

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Function "**mersenne**"

- Input: The number *x*
- Output: $2^x - 1$

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2.

A soldier is walking on a minefield with a mine detector. He can walk in four directions: North (or 1), south (or 2), east (or 3) and west (or 4). He picks a direction randomly and walks if this direction is clear (He can forget his choice and pick the same direction again).

There is only one path that he can walk: [1,3,2,3,3,1,2,2,4,4,2,4,4,4,1,1,4,4,2,3,3,3,1,1,3].

He can pick and test one direction in one minute and he has 60 minutes to escape.

Write a code to find the number of steps he needed to escape if he managed. If he could not escape in 60 minutes, print "helicopter on the way" to rescue him.