Some Python exercises

Expressions

1. There are 5280 feet in a mile. Write a Python statement that calculates and prints the number of feet in 13 miles.
2. Write a Python statement that calculates and prints the number of seconds in 7 hours, 21 minutes and 37 seconds.
3. The area of a rectangle is wh, where w and h are the lengths of its sides. Note that the multiplication operation is not shown explicitly in this formula. This is standard practice in mathematics, but not in programming. Write a Python statement that calculates and prints the area in square inches of a rectangle with sides of length 4 and 7 inches.
4. Write a Python expression that combines the string `"Joe Bloggs is 35 years old."` from the string `"Joe Bloggs"` and the number 35 and then prints the result (Hint: Use the function `str` to convert the number into a string.)

Functions

5. Write a Python function `miles_to_feet` that takes a parameter `miles` and returns the number of feet in `miles` miles.
6. Write a Python function `total_seconds` that takes three parameters `hours`, `minutes` and `seconds` and returns the total number of seconds for `hours` hours, `minutes` minutes and `seconds` seconds.
7. Write a Python function `point_distance` that takes as the parameters x0, y0, x1 and y1, and returns the distance between the points (x0,y0) and (x1,y1).

Logic and conditionals

8. Write a Python function `is_even` that takes as input the parameter `number` (an integer) and returns `True` if `number` is even and `False` if `number` is odd. Hint: Apply the remainder operator to n (i.e., `number % 2`) and compare to zero.
9. Write a Python function `interval_intersect` that takes parameters a, b, c, and d and returns `True` if the intervals [a,b] and [c,d] intersect and `False` otherwise. While this test may seem tricky, the solution is actually very simple and consists of one line of Python code. (You may assume that a≤b and c≤d.)
10. Write a Python function `name_and_age` that take as input the parameters `name` (a string) and `age` (a number) and returns a string of the form `"% is % years old."` where the percents are the string forms of name and age. The function should include an error check for the case when age is less than zero. In this case, the function should return the string "Error: Invalid age".