PYTHON

Assignment

1. Create a class `BankAccount` that has:

- An instance variable `account_balance` which is initialized to 0 in the constructor.
- A static variable `interest_rate` which is initialized to 0.05.
- A method `deposit` that adds an amount to `account_balance`.
- A method `withdraw` that subtracts an amount from `account_balance`.
- A method `apply_interest` that updates `account_balance` based on the `interest_rate`.
- Implement a class method `set_interest_rate` to change the `interest_rate`.

2. Create a class `Rectangle` that has:

a. An instance variable `length` and `width` initialized via the constructor.
b. A method `calculate_area` that calculates and returns the area of the rectangle using instance variables.
c. A method `resize` that takes local variables for new length and width and updates the instance variables accordingly.

3. Create a class `Employee` that has:

a. An instance variable `name` and `salary`.
b. A static variable `company_name`.
c. A method `display_info` that prints the employee's name, salary, and company name.
d. A static method `change_company_name` to change the `company_name`.

4. Create a class `Car` with:

a. An instance variable `fuel` initialized to 100.
b. A method `drive` that uses a local variable to determine how much fuel to consume based on distance driven.
c. A method `refuel` to replenish the fuel and ensure it does not exceed 100.

5. Create a class `TemperatureConverter` with:

a. An instance variable `temperature_celsius`.
b. A method `convert_to_fahrenheit` that uses a local variable to store the result of converting Celsius to Fahrenheit.
c. A method `update_temperature` that takes a new Celsius temperature and updates the instance variable.