Algorithm 2: Greedy Approach to Hamiltonian Problem

Pseudocode

```
Function whichCityToStart( ListCityDistances, ListFuel, mpg) {
    TotalFuel = 0;
    CurrentFuel = 0;
    StartingCity = 0;
    For currentCity in Size(ListCityDistances)
        CurrentFuel = (fuel[currentCity] * mpg) - ListCityDistances[currentCity]
        TotalFuel = (fuel[currentCity] * mpg) - ListCityDistances[currentCity]
        If CurrentFuel < 0;
            StartingCity = i  + 1;
            CurrentFuel = 0
    If TotalFuel >= 0
        Return StartingCity
    Else
        Return none
```

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Proven Efficiency of the pseudocode “Step Counts”

```
Function whichCityToStart( ListCityDistances, ListFuel, mpg) {
    TotalFuel = 0;                                                                      O(1)
    CurrentFuel = 0;                                                                    O(1)
    StartingCity = 0;                                                                   O(1)
    For currentCity in Size(ListCityDistances)          // n = size                     O(n)
        CurrentFuel = (fuel[currentCity] * mpg) - ListCityDistances[currentCity]        O(1)
        TotalFuel = (fuel[currentCity] * mpg) - ListCityDistances[currentCity]          O(1)
        If CurrentFuel < 0;                                                             O(1)
            BestCity = i  + 1;                                                          O(1)
            CurrentFuel = 0                                                             O(1)
    If TotalFuel >= 0                                                                   O(1)
        Return StartingCity                                                             O(1)
    Else                                                                                O(1)
        Return none                                                                     O(1)
```

O(1)+O(1)+O(1)+O(n)+O(1)+O(1)+O(1)+O(1)+O(1)+O(1)+O(1)+O(1)+O(1) = O(n)

The time complexity for this Algorithm is O(n)