Computational Approach to solving Huggett Model:

1. Initialize the algorithm: Set parameters, grid bounds, number of grid points. Initialize (i.e give an initial guess) policy and value functions, stationary distribution (μ) , and price (q).

2. Value Function Iteration: Take as given bond price q. Solve household's decision problem. Once done, you should get out value and asset policy function.

   - Note: this is identical to what you did in Problem Set 1.

3. Stationary Distribution: Take as given policy function solved for in (2). Calculate the stationary asset distribution following the law of motion.

   - Note: See Matlab Code (`ComputeDist.m`) where I go over on how to do this for a simple example.

4. Asset Market Clearing: Taking as given the policy function solved for in (2) and stationary distribution solved for in (3), net asset supply.

   - Note: This is just one big sum over all the states and corresponding asset decision (from the policy function) and distribution weight

If asset market clearing condition is met – that is, if net asset supply is less than some tolerance ϵ – you are done. Otherwise, update the bond price and repeat steps (2) - (4).

Pseudo Code to Solve Huggett Model (steps (2) - (4)):

Algorithm 1 Huggett

procedure MAIN CODE
  $q_0 = q_{\text{init}}$
  convergence flag $= 0$
  while convergence flag $= 0$ **do**
    do Solve VFI ▷ Part 2
    return $\{V(a,s), a'(a,s)\}$

    do Solve Stationary Distribution ▷ Part 3
    return μ

    do Calculate Net Asset Supply ▷ Part 4
    return $\sum_{a,s} a'(a,s)\mu(a,s)$

    if $\sum_{a,s} a'(a,s)\mu(a,s) > 0$ **then**
      Set: $q_1 > q_0$ ▷ If Assets held in positive net supply, increase bond price (decrease interest rate) so agents want to save less
      $q_0 \leftarrow q_1$
      return q_0
    else if $\sum_{a,s} a'(a,s)\mu(a,s) < 0$ **then**
      Set: $q_1 < q_0$ ▷ If Assets held in negative net supply, decrease bond price (increase interest rate) so agents want to save more
      $q_0 \leftarrow q_1$
      return q_0
    else if $\left|\sum_{a,s} a'(a,s)\mu(a,s)\right| < \epsilon_q$ **then**
      return convergence flag $= 1$
    end if

  end while
end procedure