**Overview:**

* Choose a set of islands on which to eradicate an invasive species (eg rats).
* Aim to maximise ‘conservation value’ of eradications, while keeping within a set budget
* The true cost and value of each island is generated using a lognormal distribution, where the mean and variance can be set
* The estimated cost and value of each island is generated by multiplying the true cost and values by random numbers drawn from a beta distribution
  + Numbers are drawn from a standard beta distribution, with parameters *a=b*, and then the result is doubled, resulting in a distribution with support [0,2], mean 1 and zero skew
  + The estimation variance is input, and then *a* is chosen to produce the correct variance, after the doubling.
* Three allocation methods are run
  + 1) Random
    - Islands are randomly selected, one a time, until a selection would increase the estimated cost above the budget. That selection is discarded and the remaining islands are stored.
  + 2) Cost-benefit
    - Islands are ranked by their estimated value/estimated cost
    - The algorithm chooses the most cost-effective islands until the next choice would go over-budget.
  + 3) Optimal
    - This is a near-optimal solution, that builds of cost-benefit.
    - Starting with the cost-benefit selection, and every set of islands has one cost benefit island removed
      * IE if cost-ben = {1,5,8,12}, then the starting points are
        + {1,5,8,12}
        + {5,8,12}
        + {1,8,12}
        + {1,5,12}
        + {1,5,8}
    - Given the current selection, the remaining islands are sorted by estimated benefit/estimated cost, and the highest ranking one which fits within the remaining budget is selected
    - This is repeated until no more islands fit within the remaining budget
    - This is done, starting with each of the starting points, and then best final selection is kept.