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In[1]:= (*3x+1 function *)
f[x_] := If[Mod[x, 2] == 0, x/2, 3 x + 1];
g[x_] := Module[{},
  (* input is an even number *)
  temp = 3 x + 1;
  While[Mod[temp, 2] == 0, temp = temp/2];
  Return[temp];
];

In[3]:= iteratef[start_, print_] := Module[{},
  count = 0;
  current = start;
  Print["We are starting at ", current, "."];
  While[current > 1,
    {
      current = f[current];
      count = count + 1;
      If[print == 1, Print[current]];
    }; (* end of while loop *)
  ];

In[4]:= iteratefrange[numdo_, startpower_, function_] := Module[{},
  results = {};
  h[y_] := If[function == 1, f[y], g[y]];
  For[n = 1, n ≤ numdo, n++,
    {
      count = 0;
      current = RandomInteger[10^startpower];
      While[current > 1,
        {
          current = h[current];
          count = count + 1;
        }; (* end of while loop *)
      results = AppendTo[results, count];
    }; (* end of n loop *)
  Print["Doing ", numdo, " runs starting at 10^", startpower];
  Print["Average is ", 1.0 Mean[results]];
  Print["StDev is ", 1.0 StandardDeviation[results]];
  Print[Histogram[results, Automatic, "Probability"]];
  ];

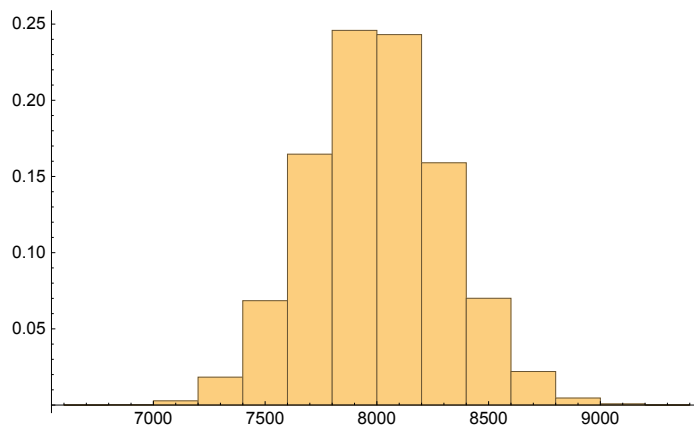
In[9]:= Timing[iteratefrange[100000, 1000, 2]]

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Doing 100 000 runs starting at 10^{1000}

Average is 8003.02

StDev is 304.15



Out[9]= {6545.02, Null}