```
function [X Y Z S C] = display_categorization_3D(data_categories_array, num_items)

  [x num_categories] = size(data_categories_array);
  category_size_vector = zeros(1,num_categories);
  max_category_size = 0;

  cnt = 0;

  for i = 1 : num_categories

    [disregarded_temp temp_size] = size(data_categories_array{i});
    category_size_vector(i) = temp_size;

    R = rand();

    G = rand();

    B = rand();

    category_color = [R G B];

    temp_category = data_categories_array{i};

    for j = 1 : category_size_vector(i)

      cnt = cnt + 1;

      temp_vector = temp_category{j};

      X(cnt) = temp_vector(1);
      Y(cnt) = temp_vector(2);
      Z(cnt) = temp_vector(3);

      C(cnt,1) = category_color(1);
      C(cnt,2) = category_color(2);
      C(cnt,3) = category_color(3);

      if(category_size_vector(i) > max_category_size)

        max_category_size = category_size_vector(i);

      endif

    endfor

  endfor

  %this loop sets the bigliness of each data point
```

```
  cnt = 0;

  for i = 1 : num_categories

    S(cnt + 1: cnt + category_size_vector(i)) = 5 +
94*(category_size_vector(i)/max_category_size);
    cnt = cnt + category_size_vector(i);

  endfor


endfunction
```