**HW2 Brag Sheet:**  
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Interactions:

Selection Window:

* **Sizes Radio Menu** – you can select small, medium, or large and this will change the length (radius) of the pizza slices.
* **# of Slices Radio Menu** – (Default is 6) you can select 4 slices, 6 slices, or 8 slices and this will change the number of slices the pizza is cut into (it will change the start\_angle and end\_angle variables when each slice is drawn.)
* **Sauces Radio Menu** – You can select Ranch, Alfredo, Garlic Parmesan, BBQ, or Marinara. These have key bindings also, R, A, G, B, and M, respectively – indicated by what’s in () beside each option. Upon having one selected, sauce will appear on the pizza with each having its own color associated with it.
* **Toppings** **Checkbox Menu** – Any number of toppings can be selected at once. Toppings include Fresh Mozzarella, Fresh Basil, Sausage, Mushrooms, and Pepperoni. These have key bindings also, 1, 2, 3, 4, and 5, respectively - indicated by what’s in () beside each option. When one of these toppings is selected, the topping will appear on the pizza.

Food Plate Window:

* When you **left-click** on the food plate window – the randomness of the topping placement is regenerate and can be shuffled around until an optimal spreading is achieved.
* When you **right-click,** a pop-up menu will appear.

Pop-up Menu:

* The pop-up menu includes the ability to **exit** the program with the quit option.
* It includes an option for **slicing** or **unslicing** the pizza. This will spread the slices of the pizza outwards, and the toppings will move with the position of the slices.
* There is a sub-menu called “Cup.”
  + You can **remove** or **put on the lid** (depending on what is currently active).
  + You can **change the drink type** by selecting Water, Grape Soda, Orange Soda, or Pepsi. This changes the color of the cylinder within the cup that represents the liquid.
* There is a sub-menu called “Rotate.”
  + Rotate -45 Degrees around the y-axis.
  + Rotate +45 Degrees around the y-axis.
* There is a sub-menu called “Plate.”
  + Change the color of the plate to Dark Grey, Green-ish-Grey, Blue-ish Grey, Red-ish Grey.
  + Change the shape of the plate to Rectangle, Square, Circle, Diamond.

Accomplishments and Challenges:

* The pizza slices are actually 3D – they have a top, a bottom, a back, and sides. The sides are repeating triangles (looped), the back is made up of straight lines from top to bottom at steps of 5 going along the curve. It was very much a challenge developing this look, and it led me to becoming very familiar with gluPerspective view and gluLookAt. The pizza is laying on the (x, z) plane with y being up and down. I focused on getting the 1st slice correct in the 2nd quadrant. Then, I rotated the slices around the origin, using the start\_angle and end\_angle to draw each.
* As you can tell, the toppings are randomly placed with each slice. Each slice being its own element – placed together to make the entire pizza. The biggest challenge with this was preventing the toppings from being off the surface area of the slice, especially when the pizza is ‘sliced’. The pepperoni, for example, have a radius of 5 – if the random coordinate is near the edge of the slice, it’ll hang off. I recalibrate the random coordinates to correspond with a smaller plane inside the original slice’s surface area, but offsetting the origin coordinates outward, and shrinking the distance of the radius. By offsetting the origin coordinates outward and keeping the same start\_angle and end\_angle, I achieved the desired affect by creating a margin along the sides of the slice. I did this for all but the sauce. Achieving this took a great deal more effort than I thought it would.

List of features:

* **Pizza Slice:**
  + **Toppings:**
    - Fresh Mozzarella: White thin cylinders with a radius of 10.
    - Fresh Basil: Custom shape 2D drawing (You can see the details for this in the notes below.)
    - Sausage: Copy of the mushrooms 2D drawing with the color changed. It suits.
    - Mushrooms: Custom shape 2D drawing (You can see the details for this in the notes below.)
    - Pepperoni: Red thin cylinders with a radius of 5.
  + **Sauces:** All the sauces are small cylinders randomly placed on the surface of the slice. With enough of them drawn, they cover the entire surface. The only difference between the different choices is the color.
* **Cup:** Cylinder wireframe.
  + **Liquid:** Solid cylinder within the wireframe cylinder of the cup.
  + **Lid:** Cylinder wireframe with a solid white cylinder.
  + **Straw**: Pink long cylinder through the center of the cup. The bend in the straw is done with a **matrix rotation** with an adjustment to coordinates. The bottom of the short straw matches up to the top of the long straw.
* **Background:** Tray – simple 2D rectangle.

References:

* None