

## ECS 175 Project 2

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### **How To Compile and Run Program**

- 1) On the command line, run “make”.
- 2) My Makefile should create an executable called “main”
- 3) Run “main” to start program
- 4) Run “make clean” to clean-up object files

### **How to Run Program**

- 1) You can start my program one of two ways:
  1. Run “main *inputFile*”
  2. Run “main”
- 2) If you provided an input file, then it will grab matrix data from that input file, otherwise it will ask you for an input file.
  1. The executable expects only 1 input file, if you put in multiple input files then it will warn you that there were too many entries and exit
  2. The input files are in this order:
    - i. # of Polyhedrons
    - ii. # of Vertexes
    - iii. Vertexes
    - iv. # of Triangles
    - v. Triangle Points
- 3) After an input file has been specified, the program will ask you to specify the Phong Model Inputs, being:
  1. Ia (between 0 and 1)
  2. Il (between 0 and 1)
  3. K (large value)
  4. N (is an int)
  5. Ambient (0-1)
  6. Diffuse (0-1)

7. Specular (o-1)
8. X values (x, y, z)
9. F values (x, y, z)
- 4) After you input the phong model inputs, it will ask you whether or not you want to have half toning (yes or no question)
- 5) After that it will draw the diagram with the specific details. Once it has finished drawing, it will ask the user whether or not they would want to quit, choosing y quits and n sends you back to the beginning of the menu phase. .

**Where did I implement my Algorithms and notes about them:**

Note: If no note included, then I suspect that the algorithm is working as intended.

**Phong:** Bresenham.cpp from lines 153 to 205

**Gouraud Shading:** main.cpp from lines 306 to 352 and in bresenham.cpp in select places (Lines 18-154)

**Half-Toning:** main.cpp lines 378 to 482

Note: For the most part it works, but at one triangle the rasterizing is failing/getting corrupted somewhere, and I don't know what is causing it. I am unsure if it is the rasterizing (since it works for everything else) or something with the half-toning at that one location. Other than that it seems to work

**Painters Algorithm:** main.cpp lines 207 to 304

### **Example Inputs:**

Input-File: input.txt

Ia: 0.8

IL: 0.8

k: 10000

n: 1

Ambient: 0.2

diffuse: 0.3

specular: 0.4

x

x: 0

y: 0

z: 0

f

x: 40

y: 40

z: 40

half-Toning: Yes