In this homework, you use classes for the brain mesh structure homework. The Please redo your coding and submit to Blackboard. The datafile is identical to that used in the previous homework.

As usual, if you use an AI, provide a link to your conversation. Not doing so will lead to point penalties and a reduced grade.

Your class, properties and methods should be in the include file “brain_mesh.h”, while the method implementations are defined in the file “brain_mesh.cpp”. Please make sure to *include* “brain_mesh.h” within “brain_mesh.cpp”.

Name the class BrainMesh.

Your class (named Brain) should have ***at least*** the following public methods:

- One or more constructors
- double totalArea()
- double triangleArea(this, computeTriangle)
  (computeTriangle should be replaced by the arguments necessary to define a triangle)
- double areaAroundVertex(this, int vertex_id)

You must have the following three files:

- main.cpp
- brain_mesh.h
- brain_mesh.cpp

Please include a Makefile

Please describe each method (function) argument in the relevant function. Each description should contain one line describing the purpose of the function, followed by lines stating the variable name, variable type, and a short description of the variable. Finally, a description of the return value.

For example:

```
float getWeight(this, int i, Person* person)  {
/*
        Return the weight of a person
        Parameters:
          i : (int), index into the “person” array
          person: (float*), array of Person instances
        Return: (float)
          Weight of the ith person.

*/

…. Body of the function …
```

```
}
```

Example of a main.c (modify as you wish subject to the stipulations above):

```
int main(int argc, char** argv) {
   BrainMesh* brain_mesh = new BrainMesh(…….);
   brain_mesh.read_vertices(…);
   brain_mesh.read_triangles(…);
   double total_area = brain_mesh.total_area(…);
   ….
   return 0;
}
```

This homework is graded out of 100.

Class (55), Documentation (35 pts), Makefile (10 pts). Read documentation on how to create a Makefile or ask your favorite AI.
To get the full points, the program must return the same results as the previous homework (assuming the previous homework generated the correct results).

Upload your code, Makefile, and results, along with a short report stating what you have done, any issues and what you tried to solve them. Include anything interesting you discovered during your work.