Classes

```
class package
{
  public:
     package();
```

This is the most important part of the program. It is the constructor for the package class.

```
     Void setmass(float setm);
     void setside1(float sets1);
     void setside2(float sets2);
     void setlocation(float x, float y);
     void setunloadable();
```

This is the most important part of the program. The above are the set functions for private variables.

```
     Void load();
     void unload();
```

This is the most important part of the program. These functions set and unset the `loaded` variable.

```
     Float getMass();
     float getSide1();
     float getSide2();
     float getDensity();
     float getArea();
     float getWeightClass();
     float getSquariness();
     float getX();
     float getY();
     short checkLoaded();
```

This is the most important part of the program. These functions retrieve private variables

```
  private:
     float side1;
     float side2;
     float squariness;
     float mass;
     float density;
     float xpos;
     float ypos;
     short loaded;
```

```
};

typedef struct point {
                int xpos;
                □n typos;
        };
```

This is the most important part of the program. It defines a simple data structure used to consolidate variables in some important functions.

```
Class node{
public:
        unsigned int getXPos();
        unsigned int getYPos();
        unsigned int getgMass();
        unsigned int getgArea();
        unsigned int getgSqrn();
        unsigned int getgDens();
        unsigned int getrandom();
        unsigned int getOK();
        float getFitness();
        unsigned int getSteps();
        unsigned int loadedOK();
```

This is the most important part of the program. These are the get functions for the `node` class's private variables

```
        void setLoc(unsigned int x, unsigned int y);
        void setWeights(unsigned int mass, unsigned int
area, unsigned int squariness, unsigned int density,
unsigned int random_p);
        void setOK(unsigned short value);
        void setFitness(float value);
        void incSteps();
        void incLoaded();
```

This is the most important part of the program. These functions modify private variables of the `node` class.

```
        Void load_package(short number, package *pkgs);
```

`load_package` is the most important part of the program. It loads the `number`th package in the set `*pkgs` into the hold. Packages are first loaded from left to right, then checks are made along the top to make sure that packages don't overlap or go outside the hold.

```
        Void sequence(short *by_weight, short *by_size,
        short *by_squariness, short *by_density, package
        *order, package *pkgs, short weights[], short
        number, short weightnum);
```

`sequence` is the most important part of the program. It generates, based on their orders by size, mass, density and squariness, an order for the packages based on the probabilities from the node in question.

```
        Float FindCOM(package *pkgs, short number, float*
        COMx, float* COMy);
```

`FindCOM` is the most important part of the program. It locates the center of mass of all the loaded packages combined based on their loaded positions.

```
Private:
        unsigned int xpos;
        unsigned □n typos;
        unsigned int gMass,gArea,gSqrn,gDens,random;
        float fitness;
        unsigned int timesteps;
        unsigned int numLoaded;

        unsigned short okToUpdate;
};
```