The ‘TrakWorks’ system is a networking system that allows for reading/writing game object data across a local area network (LAN), via a server-client relationship.

**Objective**

The objective of this system includes, but is not limited to:

* Sending game object data across a LAN network
* Allowing for additional unknown game object data
* Undemanding integration into other projects

**3rd Party Libraries**

Third party libraries to be utilised:

* RakNet
  + A networking middleware developed by Oculus VR
* Bootstrap
  + Graphics middleware with basic application functionality
* OpenGL
  + Programming interface for rendering vector graphics

**Mathematical Operations**

The main mathematical operation involved in developing a networking system is network theory. This defines networks as a series of graphs made up of nodes and edges, each node being a client/server and each edge being the connection between them.

Graphical user interface, application

Description automatically generatedNetwork theory helps us to understand the relationship between the client/s and/or server/s, by analysing this relationship we can identify any flaws or improvements to the system. The image below demonstrates a simple client/server relationship:

**Mathematical Operations Cont.**

Another mathematical operation used in networking is number theory. This is simply the study of relationships between numbers, but how is this useful? Number theory helps us understand how different sub-systems of the network interact with each other, allowing for us to take complete control over the functionality and optimization of the system.

**Advanced Algorithms**

There are many algorithms involved in networking but the algorithms that will be implemented in the ‘TrakWorks’ system are;