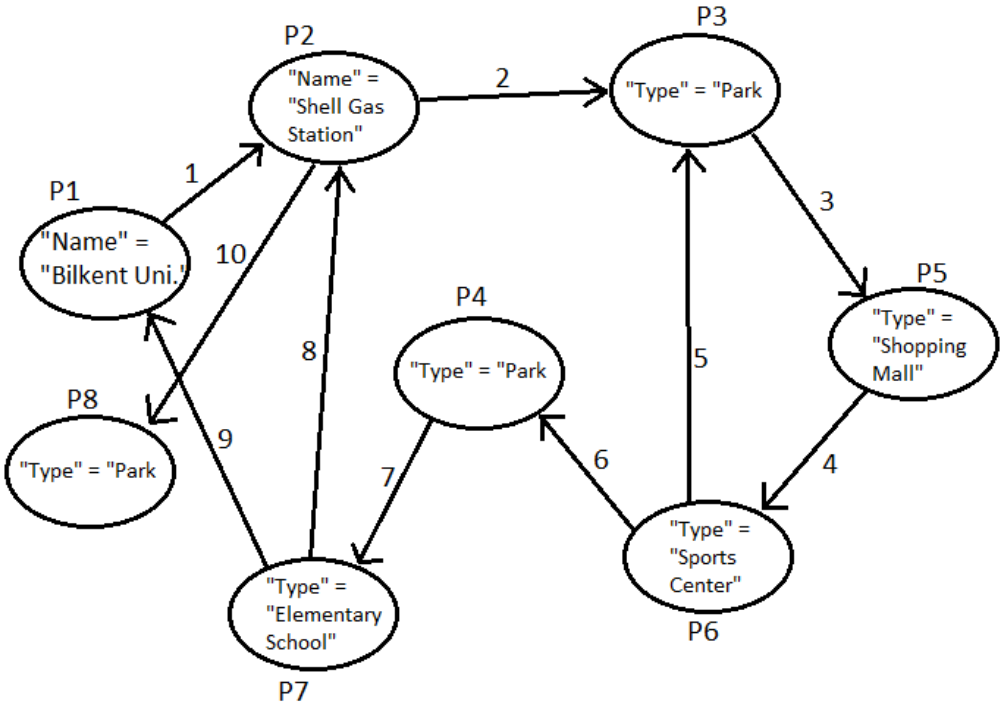
One Way Street Network Definition Sample:

Sample Code:

```
sn1 = SN(->);           //create a one way street network

point1 = Point(); //create a new point

//add properties with string values to point 1.
point1.addProperty(Property("Name", "Bilkent University"));
point1.addProperty(Property("Type", "University"));

//We will demonstrate how to add a List as a property Value
departmentList = List();
            //This will be: {'Engineering', 'Fine Arts', 'Law'}
departmentList.append("Engineering");
departmentList.append("Fine Arts");
departmentList.append("Law");
point1.addProperty(Property("Departments", departmentList));

point2 = Point();
point2.addProperty(Property("Name", "Shell Gas Station"));

//We will demonstrate how to add a Map as a property value.
//The map will also have lists in it.
saleOptionsMap = Map();
//This will be: {{'Gas Types': 'LPG', 'Diesel'}, {'Payment
//Options': 'Cash', 'Visa', 'Mastercard'}}
list1 = List();   //will contain the list of gas-types
list1.append("LPG");
list1.append("Diesel");
list2 = List();   //will contain the list of payment-options
list2.append("Cash");
list2.append("Visa");
list2.append("Mastercard");
saleOptionsMap.add("Gas types", list1)
saleOptionsMap.add("Payment methods", list2);
point1.addProperty("Sells", saleOptionsMap);
//add this map as the value of the property


//Let us create a street which we can pass in 5 minutes
//from Bilkent University to Shell Gas Station
street1 = Street(5, point1, point2);

//Let us create some points and streets
point3 = Point();
point4 = Point();
point5 = Point();
point6 = Point();
point7 = Point();
point8 = Point();

point3.addProperty(Property("Type", "Park"));
point4.addProperty(Property("Type", "Park"));
point5.addProperty(Property("Type", "Shopping Mall"));
point6.addProperty(Property("Type", "Sports Center"));
point6.addProperty(Property("Payment-Options", "Mastercard");
point7.addProperty(Property("Type", "Elementary School"));
point8.addProperty(Property("Type", "Parking Lot"));
```

```
//Let us remove a property
point8.removeProperty(0);     //removes property at index 0.
point8.addProperty(Property("Type", "Park"));
//add new property

street2 = Street(5, point2, point3);
street3 = Street(20, point3, point5);
street4 = Street(15, point5, point6);
street5 = Street(25, point6, point3);
street6 = Street(10, point6, point4);
street7 = Street(15, point4, point7);
street8 = Street(20, point7, point2);
street9 = Street(30, point7, point1);
street10 = Street(35, point2, point8);

//Let us add a delay to a street and remove it
street1.addDelay(10, "Road-work");
//10 minute delay due to roadwork
street1.removeDelay(0); //Let us remove this delay

//Let us close a street and re-open it
street1.closed(Time(10, 30), Time(15,25), "Traffic accident");
//Street is closed temporarily from 10:30 to 15:25 due to
//traffic accident
street1.opened()

//Add these streets to our street network
sn1.addStreet(street1);
sn1.addStreet(street2);
sn1.addStreet(street3);
sn1.addStreet(street4);
sn1.addStreet(street5);
sn1.addStreet(street6);
sn1.addStreet(street7);
sn1.addStreet(street8);
sn1.addStreet(street9);
sn1.addStreet(street10);
```

Graph for This Code:



Query Examples:

```
predicate1 = (“Type” == “Park”);
predicate2 = (“Name” == “Bilkent University”)
predicate3 = (“Type” == “Sports Center”)
predicate4 = (“Name” == “Shell Gas Station”)
predicate5 = (“Payment Options” == “Cash”)
predicate6 = (“Name” == vary(x))

predicate7 = (predicate4)concat(predicate5)
predicate8 = ((predicate1)alter(predicate3))concat(predicate2)
predicate9 = (predicate1)rep(3)
predicate10 =(predicate2)concat((predicate1)rep(2))concat(predicate4)
predicate11 =
((predicate6)alter(predicate3)concat(predicate2))alter(predicate9)

sn1.findRoute(predicate7);
sn1.findRoute(predicate8);
sn1.findRoute(predicate9);
sn1.findRoute(predicate10);
sn1.findRoute(predicate11);
```