

GUI

```
-model: DefaultListModel<String>
-dec: DecimalFormat
-maxLength: int
-maxDiameter: int
-maxQty: int
-btnAdd: JButton
-btnCancel: JButton
-btnClear: JButton
-btnDelete: JButton
-btnSubmit: JButton
-cbxChemicalResistance: JCheckBox
-cbxColour: JComboBox<String>
-cbxGrade: JComboBox<String>
-cbxInsulation: JCheckBox
-cbxReinforcement: JCheckBox
-lblTitle: JLabel
-lblLength: JLabel
-lblDiameter: JLabel
-lblGrade: JLabel
-lblQuantity: JLabel
-lblOrderListKey: JLabel
-jpnNewOrder: JPanel
-jpnCurrentOrder: JPanel
-lbxOrderList: JList<String>
-spnQty: JSpinner
-tbxDiameter: JTextField
-tbxError: JTextArea
-tbxLength: JTextField
-tbxTotal: JTextField
-pipes: Pipe
-pipeFactory: PipeFactory
```

```
+GUI()
-btnSubmitActionPerformed(evt: ActionEvent): void
-btnCancelActionPerformed(evt: ActionEvent): void
-btnAddActionPerformed(evt: ActionEvent): void
-btnDeleteActionPerformed(evt: ActionEvent): void
-btnClearActionPerformed(evt: ActionEvent): void
-updateTotal(): void
-main(args: String[]): void
```

PipeFactory

```
+MakePipe(grade: int, chemicalResistance: int, length: double,
outerDiameter: double, innerInsulation: boolean,
outerReinforcement: boolean, colour: int, qty: int): Pipe
+ValidatePipe(grade: int, chemicalResistance: int, length: double,
outerDiameter: double, innerInsulation: boolean,
outerReinforcement: boolean, colour: int, qty: int): String
#convertToInches(meter: double): double
#convertToMeters(inch: double): double
```

Pipe

```
-qty: int
-grade: int
-chemicalResistance: boolean
-costPerInch: double[]
-costTotal: double
-baseCost: double
-colours: int
-length: double
outerDiameter: double
-innerDiameter: double
```

```
+Pipe(grade:int, chemicalResistance:
boolean, length:double, outerDiameter:
double, qty: int, colours: int)
+getCostPerInch(): double
+getColour(): int
+getInnerinsulation(): String
+getOuterReinforcement(): String
+getChemicalResistance(): String
-pipeVolume(): double
-cylinderVolume(d:double):double
-calculateBaseCost():double
-calculateCost(): void
```

PipeT3

```
+PipeT3(grade: int, chemicalResistance:
boolean, length: double, outerDiameter:
double, qty: int)
+calculateCost(): void
+getGrade(): int
```

PipeT1

```
+PipeT1(grade: int, chemicalResistance:
boolean, length: double, outerDiameter:
double, qty: int)
```

PipeT2

```
+PipeT2(grade: int, chemicalResistance:
boolean, length: double, outerDiameter:
double, qty: int)
+calculateCost(): void
+getGrade(): int
```

PipeT5

```
+PipeT5(grade: int, chemicalResistance:
boolean, length: double, outerDiameter:
double, qty: int)
+calculateCostT5(): void
+getGrade(): int
+getOuterReinforcement(): String
```

PipeT4

```
+PipeT4(grade: int,
chemicalResistance: boolean, length:
double, outerDiameter: double, qty:
int)
+calculateCostT4(): void
+getGrade(): int
```