Trees in Python

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1 Trees in Python

Establishing the values of variables.

```
[41]: vars = {
          'x': 4,
          'y': 7
      }
```

1.1 Class Declarations

1.1.1 Base Class Declarations

Creating the base class for expressions.

```
[42]: class Exprs():
          pass
```

Defining the base class for Operators such as + and *.

```
[43]: class Operators(Exprs):
          def __init__(self, l, r):
              self.l = l
              self.r = r

          def __str__(self):
              return f'({self.l} {self.symb} {self.r})'
```

1.1.2 Specific Operator Declarations

```
[44]: class Minus(Operators):
          def __init__(self, l, r):
              super().__init__(l, r)
              self.symb = '-'
```

```
[45]: class Plus(Operators):
          def __init__(self, l, r):
              super().__init__(l, r)
```

```
                            self.symb = '+'
```

```
[46]: class Times(Operators):
          def __init__(self, l, r):
              super().__init__(l, r)
              self.symb = '*'
```

```
[47]: class Divide(Operators):
          def __init__(self, l, r):
              super().__init__(l, r)
              self.symb = '/'
```

1.1.3 Other Class Declarations

```
[48]: class Const(Exprs):
          def __init__(self, value):
              self.value = value

          def __str__(self):
              return str(self.value)
```

```
[49]: class Var(Exprs):
          def __init__(self, name):
              self.name = name

          def __str__(self):
              return str(self.name)
```

1.2 Object Creation

Creates the equation: $5 * (4 + x)$

```
[50]: e1 = Times(Const(5), Plus(Const(4), Var('x')))
```

```
[51]: print(e1)
```

```
(5 * (4 + x))
```

Creates the equation: $\frac{9+y}{8-x}$

```
[52]: e2 = Divide(Plus(Const(9), Var('y')), Minus(Const(8), Var('x')))
```

```
[53]: print(e2)
```

```
((9 + y) / (8 - x))
```