

```

In [1]: class loan(object):
    def __init__(self, name):
        self._name = name

    def who(self):
        print(self._name)

    def setPV(self, PV):
        self._PV = PV
        print("Present Value = ", self._PV)

    def setRate(self, ratePct):
        self._ratePct = ratePct
        print("Rate = {:.2f}%".format(self._ratePct))

    def setMonths(self, months):
        self._months = months
        print(self._months, "Months")

    def computePmt(self):
        r = self._ratePct/100/12
        self._Pmt = self._PV * (r * (1 + r)**self._months) / ((1 + r)**self._months)
        print("Payment = ${:.2f}".format(self._Pmt))
        return self._Pmt

    def computeRate(self, Pmt, PV, months, acc):
        self._topR = 100
        self._botR = 0
        self.setPV(PV)
        self.setMonths(months)

        while(True):
            self._currRate = (self._topR + self._botR) / 2
            self.setRate(self._currRate)
            self._currPmt = self.computePmt()
            if(abs(self._currPmt - Pmt) < 1*10**-acc):
                self._currRate = round(self._currRate, acc)
                print("Rate = {:.2f}%".format(self._currRate))
                return self._currRate
            elif(self._currPmt > Pmt):
                self._topR = self._currRate
            else:
                self._botR = self._currRate

```

```

In [2]: loan_test = loan("Jim")

```

```
In [3]: loan_test.setPV(10000)
        loan_test.setRate(5)
        loan_test.setMonths(48)
        loan_test.computePmt()
```

```
Present Value = 10000
Rate = 5.00%
48 Months
Payment = $230.29
```

```
Out[3]: 230.29293570646587
```

```
In [4]: loan_test.computeRate(Pmt=230.29, PV=10000, months=48, acc=2)
```

```
Present Value = 10000
48 Months
Rate = 50.00%
Payment = $485.02
Rate = 25.00%
Payment = $331.57
Rate = 12.50%
Payment = $265.80
Rate = 6.25%
Payment = $236.00
Rate = 3.12%
Payment = $221.90
Rate = 4.69%
Payment = $228.88
Rate = 5.47%
Payment = $232.42
Rate = 5.08%
Payment = $230.65
Rate = 4.88%
Payment = $229.76
Rate = 4.98%
Payment = $230.20
Rate = 5.03%
Payment = $230.43
Rate = 5.00%
Payment = $230.32
Rate = 4.99%
Payment = $230.26
Rate = 5.00%
Payment = $230.29
Rate = 5.00%
```

```
Out[4]: 5.0
```

```
In [ ]:
```