

```
def fact(n): return 1 if n <=1 else n*fact(n-1)
```

```
class PascalTriangleRowIterator:
```

```
    def __init__(self, position, start=0):
```

```
        self.k = start
```

```
        self.n = position
```

```
        self.fact_n = fact(position)
```

```
    def __iter__(self):
```

```
        return self
```

```
    def __next__(self):
```

```
        if self.k > self.n:
```

```
            raise StopIteration
```

```
        tmp = self.fact_n//((fact(self.k)*fact(self.n-self.k))
```

```
        self.k = self.k + 1
```

```
        return tmp
```

```
    def prev(self):
```

```
        if self.k <= 0:
```

```
            raise StopIteration
```

```
        self.k = self.k - 1
```

```
        return self.fact_n//((fact(self.k)*fact(self.n-self.k))
```

```
class PascalTriangleIterator:
```

```
    def __init__(self, n, start=0):
```

```
        self.dimension = n
```

```
        self.position = start
```

```
    def __next__(self):
```

```
        if self.position >= self.dimension: raise StopIteration
```

```
        self.position = self.position+1
```

```
        return PascalTriangleRowIterator(self.position-1)
```

```
    def prev(self):
```

```
        if self.position <= 0: raise StopIteration
```

```
        self.position = self.position - 1
```

```
        return PascalTriangleRowIterator(self.position,self.position+1)
```

```
class PascalTriangle:
```

```
    def __init__(self, n, start=0):
```

```
        self.rows = n
```

```
        self.start=start
```

```
    def __iter__(self):
```

```
        return PascalTriangleIterator(self.rows, self.start)
```