```python
In [2]:  import pulp as pl
```

```python
In [3]:  a = pl.LpVariable("a",0,1,pl.LpInteger)
         b = pl.LpVariable("b",0,1,pl.LpInteger)
         c = pl.LpVariable("c",0,1,pl.LpInteger)
         d = pl.LpVariable("d",0,1,pl.LpInteger)
         e = pl.LpVariable("e",0,1,pl.LpInteger)
```

```python
In [4]:  prob = pl.LpProblem("Knapsack",pl.LpMaximize)
```

```python
In [5]:  prob += 4 * a + 2 * b + 10 * c + 1 * d + 2 * e
```

```python
In [6]:  prob += 12 * a + 1 * b + 4 * c + 1 * d  + 2 *e <= 15
```

```python
In [7]:  prob.variables
```

```
Out[7]:  <bound method LpProblem.variables of Knapsack:
         MAXIMIZE
         4*a + 2*b + 10*c + 1*d + 2*e + 0
         SUBJECT TO
         _C1: 12 a + b + 4 c + d + 2 e <= 15

         VARIABLES
         0 <= a <= 1 Integer
         0 <= b <= 1 Integer
         0 <= c <= 1 Integer
         0 <= d <= 1 Integer
         0 <= e <= 1 Integer
         >
```

```python
In [8]:  status = prob.solve()
```

```python
In [9]:  print(pl.LpStatus[status])
```

```
         Optimal
```

```python
In [13]:  # print the values
          print("a", pl.value(a))
          print("b", pl.value(b))
```

```
print("c", pl.value(c))
print("d", pl.value(d))
print("e",pl.value(e))
```

```
a 0.0
b 1.0
c 1.0
d 1.0
e 1.0
```

In [14]:
```
pl.value(prob.objective)
```

Out[14]: 15.0

In [ ]: