

```
from collections import deque
```

```
def Solution(a, b, target):
```

```
    m = {}
```

```
    isSolvable = False
```

```
    path = []
```

```
    q = deque()
```

```
    q.append((0, 0))
```

```
    while len(q) > 0:
```

```
        u = q.popleft()
```

```
        if (u[0], u[1]) in m:
```

```
            continue
```

```
        if u[0] > a or u[1] > b or u[0] < 0 or u[1] < 0:
```

```
            continue
```

```
        path.append([u[0], u[1]])
```

```
        m[(u[0], u[1])] = 1
```

```
        if u[0] == target or u[1] == target:
```

```
            isSolvable = True
```

```
        if u[0] == target:
```

```
            if u[1] != 0:
```

```
                path.append([u[0], 0])
```

```
        else:
```

```
            if u[0] != 0:
```

```
                path.append([0, u[1]])
```

```
        for state in path:
```

```
            print("(", state[0], ",", state[1], ")")
```

```
        break
```

```
    q.append((u[0], b))
```

```
    q.append((a, u[1]))
```

```
    for ap in range(max(a, b) + 1):
```

```
        c = u[0] + ap
```

```
        d = u[1] - ap
```

```
        if c == a or (d == 0 and d >= 0):
```

```
            q.append((c, d))
```

```

c = u[0] - ap
    d = u[1] + ap
    if (c == 0 and c >= 0) or d == b:
        q.append((c, d))

    q.append((a, 0))
    q.append((0, b))

if not isSolvable:
    print("Solution not possible")

if __name__ == "__main__":
    Jug1 = int(input("Enter the capacity of Jug1: "))
    Jug2 = int(input("Enter the capacity of Jug2: "))
    target = int(input("Enter the target: "))
    print("Path from initial state to solution state ::")
    Solution(Jug1, Jug2, target)

```

OUTPUT:

```

Enter the capacity of Jug1: 4
Enter the capacity of Jug2: 3
Enter the target: 2
Path from initial state to solution state ::
( 0 , 0 )
( 0 , 3 )
( 4 , 0 )
( 4 , 3 )
( 3 , 0 )
( 1 , 3 )
( 3 , 3 )
( 4 , 2 )
( 0 , 2 )

```