

C1

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#soda_simul
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```
import numpy as np

def soda_simul(this_state):
    u = np.random.uniform(0,1)
    if(this_state == "c"):
        if(u<=0.7):
            next_state = "c"
        else:
            next_state = "p"
    else:
        if(u<=0.5):
            next_state = "c"
        else:
            next_state = "p"
    return next_state
for i in range(5):
    now_stage = "c"
    path = []

    for j in range(9):
        path.append(now_stage)
        next_state = soda_simul(now_stage)
        now_stage = next_state

    print(' '.join(path))
```

```
## ccccccpcc
## cccpccpcc
## ccccpcccp
## cpccccccc
## cccccppcc
```

```

#cost_eval

import numpy as np

def soda_simul(this_state):
    u = np.random.uniform(0,1)
    if(this_state == "c"):
        if(u<=0.7):
            next_state = "c"
        else:
            next_state = "p"
    else:
        if(u<=0.5):
            next_state = "c"
        else:
            next_state = "p"
    return next_state

def cost_eval(path):
    cost_one_path = path.count("c") * 1.5 + path.count("p") * 1
    return cost_one_path

MC_N = 10000
spending_record = np.array([])

for i in range(MC_N):
    now_stage = "c"
    path1 = []

    for j in range(9):
        path1.append(now_stage)
        next_state = soda_simul(now_stage)
        now_stage = next_state
    spending_record = np.append(spending_record, np.array([cost_eval(''.join(path1))]))

print(np.mean(spending_record))

## 12.0382

```