(a)

```
int Catalan(int n)
{
        if(n == 0)
                return 1;
        else
        {
                int cat = (4*(n-1)+2)*Catalan(n-1)/(n-1+2);
                return cat;
        }
}
```

(b)

假設 n,V,B,v1…vn,b1…bn 皆為正數

(n,V,B) =

S　if((n-1, V-vn, B-bn)== NS || (n-1, V-vn, B-bn)== S)

NS　if((n-1, V, B)== S || (n-1, V, B)== NS)

IMP　else

(1,V,B) =

S　if(v1 >= V && b1 <= B)

NS　if(V==0)

IMP　else

(c)

Path NetWork::getAugPath()

Vector<Path>　Vpath(only include start)

While(not find end && Vpath is not empty)

get Vpath’s front

erase Vpath’s front

use Vpath’s front to get next paths

for each path check

if there is a cycle

erase it

else

continue

sort paths

for each paths

if it has the end point

return the path

else

push it into Vpath

return empty path

(d)

(i)

修改函數參數設定，傳進一終點一起點進函數，讓函數從傳進的起點為起點，傳進的終點為終點，把 6 種配對皆呼叫一次即可。

(ii)

在 NetWork 裡的 getNext 函數需修改為比較(1)舊路徑的 capacity(2)新路徑的 capacity(3)新的點的 capacity，三者中取小的才是回傳的 path 的 capacity