**R\_HW2\_YOLO**

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**Q1.**

S= {1,1} {1,2} {1,3} {1,4} {1,5} {1,6}

{2,1} {2,2} {2,3} {2,4} {2,5} {2,6}

{3,1} {3,2} {3,3} {3,4} {3,5} {3,6}

{4,1} {4,2} {4,3} {4,4} {4,5} {4,6}

{5,1} {5,2} {5,3} {5,4} {5,5} {5,6}

{6,1} {6,2} {6,3} {6,4} {6,5} {6,6}

* 1. *A*= {1,4} {1,5} {1,6}

{2,3} {2,4} {2,5} {2,6}

{3,2} {3,3} {3,4} {3,5} {3,6}

{4,1} {4,2} {4,3} {4,4} {4,5} {4,6}

{5,1} {5,2} {5,3} {5,4} {5,5} {5,6}

{6,1} {6,2} {6,3} {6,4} {6,5} {6,6}

* 1. *B*= {2,1}

{3,1} {3,2}

{4,1} {4,2} {4,3}

{5,1} {5,2} {5,3} {5,4}

{6,1} {6,2} {6,3} {6,4} {6,5}

* 1. *C*= {4,1} {4,2} {4,3} {4,4} {4,5} {4,6}
  2. = {4,1} {4,2} {4,3} {4,4} {4,5} {4,6}
  3. = {2,1}

{3,1} {3,2}

{4,1} {4,2} {4,3} {4,4} {4,5} {4,6}

{5,1} {5,2} {5,3} {5,4}

{6,1} {6,2} {6,3} {6,4} {6,5}

* 1. = {3,2}

{4,1} {4,2} {4,3} {4,4} {4,5} {4,6}

{5,1} {5,2} {5,3} {5,4}

{6,1} {6,2} {6,3} {6,4} {6,5}

* 1. P(=6/36=0.167
  2. =18/36=0.5
  3. )=16/36=0.444

1. See R\_HW2\_YOLO.R

Answer: 0.458

**Q2.**

Prove Bonferroni’s inequality P(A∩B) ≧ P(A)+P(B)-1

pf:

P() ≧ – (n-1)

使用數學歸納法

**當n=2時**

**P(A∩B) ≧ P(A) + P(B) - 1**

**又**

**P(A∪B) ≦ 1**

**假設成立**

當n=n-1時

P() ≦ – (n-2)

令B =

P(B∩) ≦ P(B) + P() – (n-2)

又

P(B∪) = P(B) + P() - P(B∩) ≦ 1

故 P() ≧ – (n-1) 得證

1. (7\*6\*5\*4)/(10\*10\*10\*10)=0.084
2. See R\_HW2\_ YOLO.R

Answer: 72

1. See R\_HW2\_ YOLO.R

Answer: 0.606

1. See R\_HW2\_ YOLO.R

Answer: (1)0.308 (2)0.076

**Q3.**

1. See R\_HW2\_YOLO.R

Answer: 0.048

1. See R\_HW2\_YOLO.R

Answer: 0.0498

**Q4.**

1. (1/6)\*(1/6)=1/36=0.028
2. (10%\*0.02) / (10%\*0.02+20%\*0.01+70%\*0.0025)=0.348
3. 20%\*40%+30%\*60%+10%\*20%+15%\*80%+25%\*90%=0.625

**Q5.**

1. See R\_HW2\_YOLO.R

Answer: 0.391

1. See R\_HW2\_YOLO.R

Answer: 0.3848

1. See R\_HW2\_YOLO.R

Answer: 119