实验报告15

学号：117060400115 姓名：魏莹 班级：应用统计一班 指导老师：林卫中

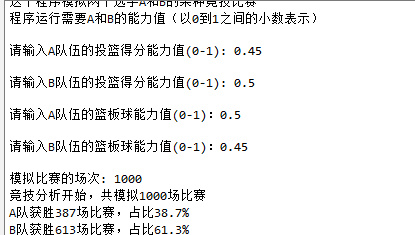
实验名称：python程序练习题

实验要求：用程序语言模拟比赛

实验结果：

1.

#e15.1MatchAnalysis.pyfrom random import randomdef printIntro(): print("这个程序模拟两个选手A和B的某种竞技比赛") print("程序运行需要A和B的能力值（以0到1之间的小数表示）")def getInputs(): a = eval(input("请输入选手A的能力值(0-1): ")) b = eval(input("请输入选手B的能力值(0-1): ")) n = eval(input("模拟比赛的场次: ")) return a, b, ndef simNGames(n, probA, probB): winsA, winsB = 0, 0 for i in range(n): scoreA, scoreB = simOneGame(probA, probB) if scoreA >= scoreB: winsA += 1 else: winsB += 1 return winsA, winsBdef gameOver(a,b): if (a<10 and b==9) or (a==11 and b<10): return True elif (a>=10 and b-a==2) or (b>=10 and a-b==2): return True return False def simOneGame(probA, probB): scoreA, scoreB = 0, 0 serving = 0#0:0表示A发球；1表示B发球 t = 0 while not gameOver(scoreA, scoreB): if serving == 0: if random() < probA: scoreA += 1 else: scoreB += 1 else: if random() < probB: scoreB += 1 else: scoreA += 1 t += 1 if t%2 == 0: serving = (serving+1)%2 return scoreA, scoreBdef printSummary(winsA, winsB): n = winsA + winsB print("竞技分析开始，共模拟{}场比赛".format(n)) print("选手A获胜{}场比赛，占比{:0.1%}".format(winsA, winsA/n)) print("选手B获胜{}场比赛，占比{:0.1%}".format(winsB, winsB/n))def main(): printIntro() probA, probB, n = getInputs() winsA, winsB = simNGames(n, probA, probB) printSummary(winsA, winsB)main()#双方十平后，必须有一方多两分才能算赢



2.

#e15.1MatchAnalysis.pyfrom random import\*def printIntro(): print("这个程序模拟两个选手A和B的某种竞技比赛") print("程序运行需要A和B的能力值（以0到1之间的小数表示）")def getInputs(): a1 = eval(input("请输入A队伍的投篮得分能力值(0-1): ")) a2 = eval(input("请输入B队伍的投篮得分能力值(0-1): ")) b1 = eval(input("请输入A队伍的篮板球能力值(0-1)：")) b2 = eval(input("请输入B队伍的篮板球能力值(0-1)：")) n = eval(input("模拟比赛的场次: ")) return a1, a2, b1, b2, ndef simNGames(n, goleA,goleB,boardA,boardB): winsA, winsB = 0, 0 for i in range(n): scoreA, scoreB = simOneGame(goleA,goleB,boardA,boardB) if scoreA > scoreB: winsA += 1 else: winsB += 1 return winsA, winsBdef gameOver(t): return t >= 12\*60def simOneGame(goleA,goleB,boardA,boardB): scoreA, scoreB = 0, 0 serving = 0 time = 0 while not gameOver(time): t = randint(1,24) time += t if t == 24: serving = (serving + 1)%2 else: if serving == 0: if random() < goleA: scoreA += 1 serving = 1 else: if random() < boardA: serving=0 else: serving = 1 else: if random() < goleB: scoreB += 1 serving = 0 else: if random() < boardB: serving = 1 else: serving=0 return scoreA, scoreBdef printSummary(winsA, winsB): n = winsA + winsB print("竞技分析开始，共模拟{}场比赛".format(n)) print("A队获胜{}场比赛，占比{:0.1%}".format(winsA, winsA/n)) print("B队获胜{}场比赛，占比{:0.1%}".format(winsB, winsB/n))def main(): printIntro() goleA,goleB,boardA,boardB,n = getInputs() winsA, winsB = simNGames(n,goleA,goleB,boardA,boardB ) printSummary(winsA, winsB)main()