

In lecture, I showed how John, Paul, George, and Ringo did in the classes they took during one particular semester at Beatles University. The following year, the university went co-ed and accepted Yoko Ono as the first female student at the university (this was back in the 1960's). The university also broadened its course offerings. The courses that the five students took are listed here:

AST 305: Here Comes The Sun
 BIO 201: Strawberry Fields Forever
 COS 127: HELP!
 ECO 101: Penny Lane
 ECO 221: Can't Buy Me Love
 ECO 307: Baby You're A Rich Man
 HIS 203: Yesterday
 HIS 411: Revolution #9
 PHY 211: If I Fell
 PSY 327: Let It Be
 REL 242: Lady Madonna
 SLA 101: Back in the U.S.S.R.

Here's the grades they got:

	AST 305	BIO 201	COS 127	ECO 101	ECO 221	ECO 307	HIS 203	HIS 411	PHY 211	PSY 327	REL 242	SLA 101
John	A-			A		A-	B	A		A	A	C
Paul	B+	B+	B-	B+		A-	B		B		B+	
George	A-	A-		A-	A-	B+		A-	A-	A-		
Ringo	B-		C-	B	B-		B+	B	C+		B	
Yoko	A	A	A-		A-		B	A		A	A	

1. Solve the least-absolute deviations problem described in the Thursday, March 1, lecture. The problem is also described here...

http://orfe.princeton.edu/~rvdb/tex/grading/sirev56-2_337_fair_grading.pdf

to determine all *student aptitudes* and *course easinesses*.

- (a) For each student, report the grade-point average (GPA) and aptitude.
 - (b) For each course, report the average grade given in that course and the easiness of the course.
2. Solve the sum-of-squared-deviations variant of the problem and report the GPA's, aptitudes, course averages, and easinesses as requested for the previous part.
 3. Instead of a sum-of-squared-deviations, $\sum_i \varepsilon_i^2$, formulate and solve a version with this objective function:

$$\sum_i \left(\sqrt{(1/4)^2 + \varepsilon_i^2} - 1/4 \right).$$

Provide the same output information as requested for the previous parts.