

Question 1 of 10: Filter out all actions from (a copy of) the data set, until you only have actions for KC "VALUING-CAT-FEATURES". How many rows of data remain?

2473

Question 2 of 10: We need to delete some rows, based on the assumptions of Bayesian Knowledge Tracing. With reference to the firstattempt column, which rows do we need to delete?

- ☐ A) Firstattempt = 1
- ☒ B) Firstattempt = 0
- ☐ C) No rows
- ☐ D) All rows

Question 3 of 10: Go ahead and delete the rows you indicated in question 2. How many rows of data remain?

1791

Question 4 of 10: We're going to create a Bayesian Knowledge Tracing model for VALUING-CAT-FEATURES. Create variable columns $P(L_{n-1})$ (cell I1), $P(L_{n-1}|RESULT)$ (cell J1), and $P(L_n)$ (cell K1), and leave the columns below them empty for now. (If you're not sure what these represent, re-watch the lecture). To the right of this, type into four cells, (cell M2) L0, (M3) T, (M4) S, and (M5) G. Now type 0.3, 0.1, 0.2, and 0.25 to the right of (respectively) L0, T, S, and G (e.g. cells N2, N3, N4, N5). What is your slip parameter?

0.2

Question 5 of 10: Just temporarily, set K3 to have $=I2+0.1$, and propagate that formula all the way down (using copy-and-paste, for example), so that K4 has $=I3+0.1$, and so on (this pretends that the student always gets 10% better each time, even going over 100%, which is clearly wrong...; we'll fix it later). What should the formula be for Column I, $P(L_{n-1})$? If you're not sure which of these is right, try them each in Excel. Now, what should the formula for cell I2 be?

- ☒ A) $=IF(C2<>C1, \$N\$2, K1)$
- ☐ B) $=IF(C2=C1, \$N\$2, K1)$
- ☐ C) $=IF(C2<>C1, N2, K1)$
- ☐ D) $=IF(C2<>C1, \$N\$2, \$K\$1)$
- ☐ E) $=IF(C2<>C1, N2, \$K\$1)$
- ☐ F) $=IF(C2=C1, N2, K1)$

Question 6 of 10: Propagate the correct formula for column I all the way down (using copy-and-paste). Just temporarily, set J2 to have =I2, and propagate that formula all the way down (this eliminates Bayesian updating, which is not correct within BKT...; we'll fix it later). Now, what should the formula for cell K2 be, to correctly represent learning based on the P(T) parameter?

- ☐ A) $((1-J2)*\$N\$3)$
- ☐ B) $((1-J2)*N3)$
- ☐ C) $(J2*\$N\$3)$
- ☐ D) $(J2*N3)$
- ☒ E) $J2 + ((1-J2)*\$N\$3)$
- ☐ F) $J2 + ((1-J2)*N3)$
- ☐ G) $J2 + (J2*\$N\$3)$
- ☐ H) $J2 + (J2*N3)$
- ☐ I) $J2 - ((1-J2)*\$N\$3)$
- ☐ J) $J2 - ((1-J2)*N3)$
- ☐ K) $J2 - (J2*\$N\$3)$
- ☐ L) $J2 - (J2*N3)$

Question 7 of 10: What should the formula for cell J2 be?

- ☐ A) $=IF(F2=1,(I2*(1-\$N\$3))/((I2*(1-\$N\$3))+((1-I2)*\$N\$3)),(I2*\$N\$3)/((I2*\$N\$3)+((1-I2)*(1-\$N\$3))))$
- ☐ B) $=IF(F2=1,(I2*\$N\$4)/((I2*\$N\$4)+((1-I2)*\$N\$5)),(I2*\$N\$4)/((I2*\$N\$4)+((1-I2)*\$N\$5)))$
- ☐ C) $=IF(F2=1,(I2*(1-\$N\$5))/((I2*(1-\$N\$5))+((1-I2)*\$N\$4)),(I2*\$N\$5)/((I2*\$N\$5)+((1-I2)*(1-\$N\$4))))$
- ☒ D) $=IF(F2=1,(I2*(1-\$N\$4))/((I2*(1-\$N\$4))+((1-I2)*\$N\$5)),(I2*\$N\$4)/((I2*\$N\$4)+((1-I2)*(1-\$N\$5))))$

Question 8 of 10: If a student starts the tutor and then gets 3 problems right in a row for the skill, what is his/her final $P(L_n)$ after these three problems?

- ☐ A) 0.856
- ☐ B) 0.950
- ☒ C) 0.955
- ☐ D) 1.000

Question 9 of 10: If a student starts the tutor and then gets 3 problems wrong in a row for the skill, what is his/her final $P(L_n)$?

- ☐ A) 0.046
- ☒ B) 0.142
- ☐ C) 0.154