Logic in Pairs Trading Assignment

All entries and exits are assumed to be at the end of the day. The limitation of this is that if a cap is hit intraday, you get out at the close and not at the instant that the cap is hit. Doing it correctly would require intraday data. While a position is on, a new signal in the same direction is ignored (and the age of the existing position doesn't reset).

Convention used in spreadsheet: no cell in the analysis refers to a cell on its right in the same row. If you use the "show precedents" function in Excel for each cell, you will see this. **A cell value is based only on values to its left and/or previous values ("above" it).**

Note that a cell in the "Age5" column AH (and Age10 and Age20) gets the value "1" at the end of that day when a position is established (when its age is really zero). In reality, this means that the "real" age of the position WILL BE 1 at the end of the next day. For this reason, when checking if a position has aged (column AI, variable Age5?) you will check whether the value of Age5 in the PREVIOUS row has hit the holding period limit (specified in cell B5). For example, in AI73 you will check whether AH72 has hit the holding period limit.

Signal Logic: if zdiff threshold exceeds long/short threshold, generate long (1) or short (-1) signal

Caps logic: if today's zdiff value crosses threshold and position exists from previous day, exit

Age of logic (age is either 1, 0, or 1+previous_age):

IF (NEW SIGNAL, possible in three ways)

new position i.e. [(previous_position=0 **AND** signal<>0) **OR**

opposite to existing one (i.e. previous_position*signal=-1)] **OR**

Position has reached its holding period limit **AND** new signal is generated

THEN **age=1**

ELSE

IF (no new signal AND no previous position) **OR**

Caps are hit **OR**

Position has reached it holding period limit

THEN **age=0**

ELSE **age=previous_age+1**

Pos logic: If Nothing is happening (no Signal, no Caps, no Aged?) then previous Pos, otherwise Signal