We examined whether pigeons can discriminate a temporal order of stimuli (i.e., whether an image has been presented first or second). Pigeons were trained in a delayed matching-to-sample task with two samples: the Sample 1 (S1), and, following a short delay, the Sample 2 (S2). During the choice phase, pigeons were presented with three comparison stimuli: the S1, the S2, and a distractor stimulus that was not previously shown during this trial. The correct choice was determined by the color of the background: For example, if the background was blue, then the pigeon was reinforced for the choice of the S1; if the background was green, then the pigeon was reinforced for the choice of the S2. The choice of the distractor stimulus was never reinforced. All pigeons quickly learned the task to a high level of accuracy; in addition, they were consistently more accurate when the S1 was correct than when the S2 was correct. The higher accuracy to the S1 trials persisted after short delays. Overall, the results indicate that pigeons can learn to discriminate the temporal order of stimuli. This task will later be used to explore the involvement of the avian hippocampus in temporal processing.