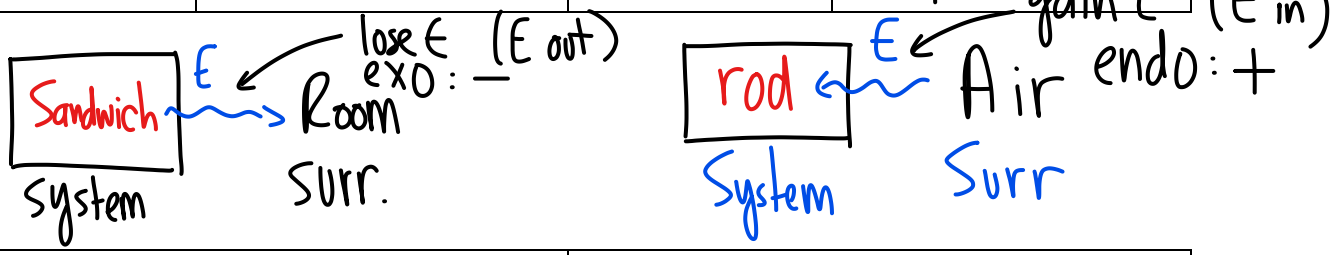
For the two situations below determine the system and the surroundings. For each situation determine if the system is exothermic or endothermic, and the sign of the heat (q), + or –

A sandwich is heated in the microwave for 2min. After heating the sandwich is warmer and transfers energy to the room. *The sandwich is being focused on*		A metal rod is placed in a refrigerator for 2 hours. Upon removing the air transfers energy to the rod *The rod is being focused on*	
System sandwich → room		System air → rod	
sandwich (focusing on)		metal rod (focusing on)	
Surroundings		Surroundings	
room (sandwich is in the room)		air (air surrounds the rod)	
Exo or Endo	exothermic	Exo or Endo	Endothermic
Sign of Heat (q)	–	Sign of Heat (q)	+



A hot cup of coffee is placed outside in the room air. The coffee transfers energy to the air *The air is being focused on*		A chemical reaction is performed and appears to get colder after the reaction occurs. The air transfers energy to the reaction. *The air is being focused on*	
System		System	
Surroundings		Surroundings	
Exo or Endo		Exo or Endo	
Sign of Heat (q)		Sign of Heat (q)	