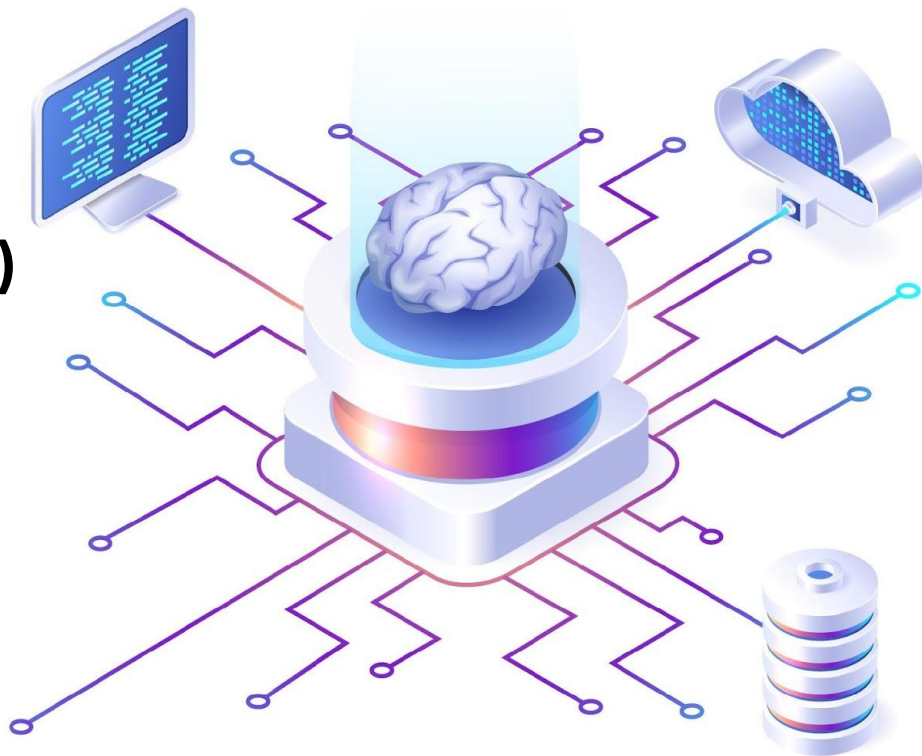


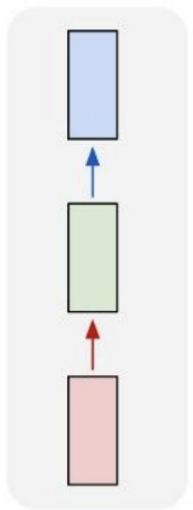
# Seq2Seq (Sequence to Sequence)

실무형 인공지능 자연어처리

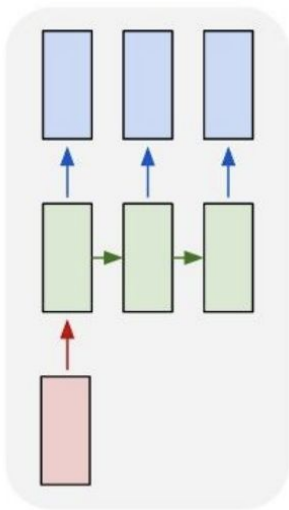


# RNN 활용

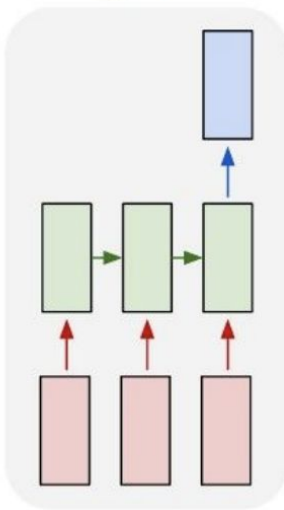
one to one



one to many

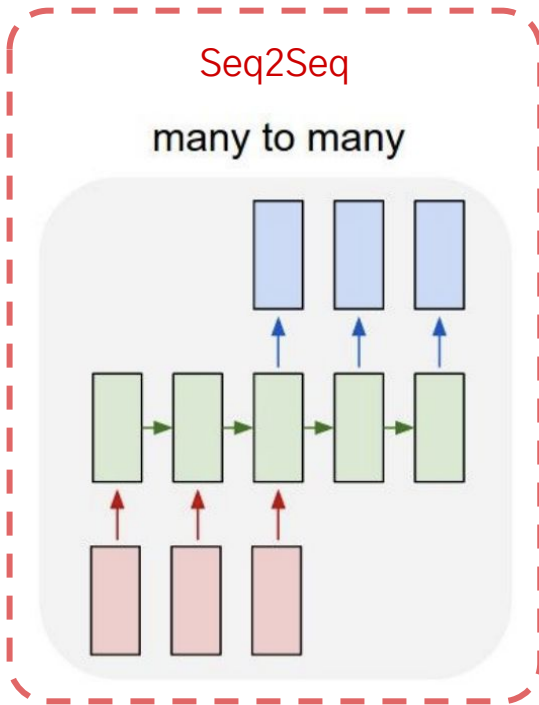


many to one

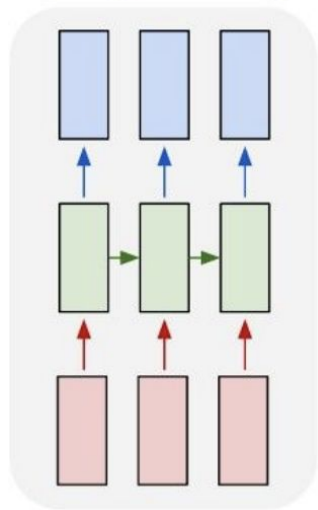


Seq2Seq

many to many

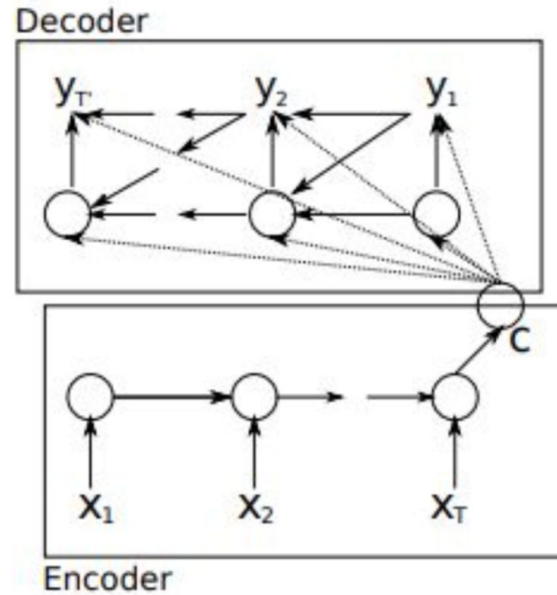


many to many

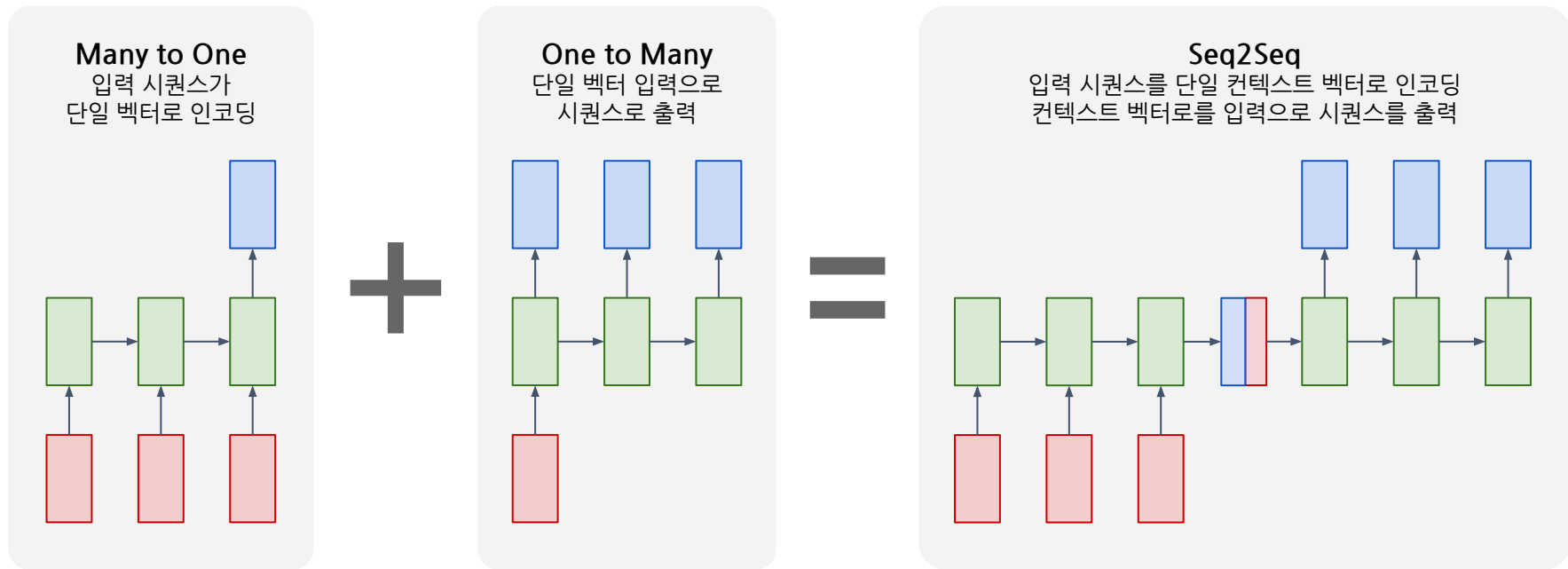


## Seq2Seq (1)

## Encoder-Decoder



# Seq2Seq (2)



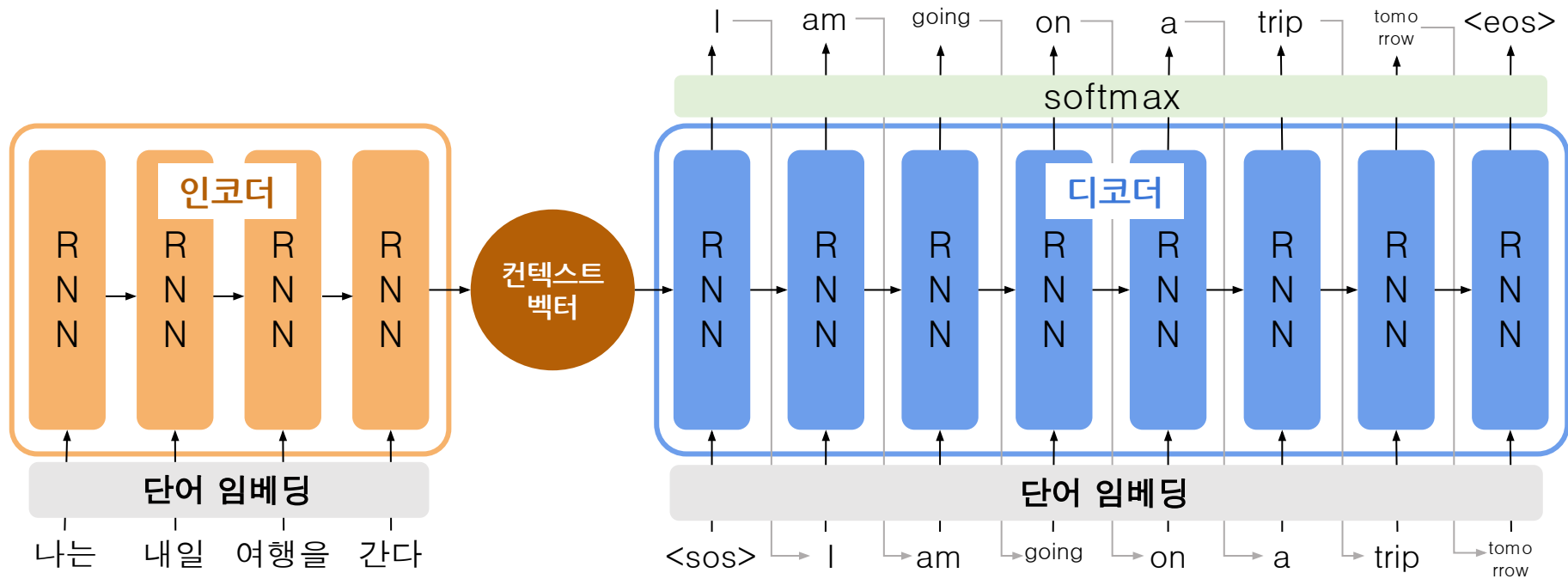
# Seq2Seq (3)



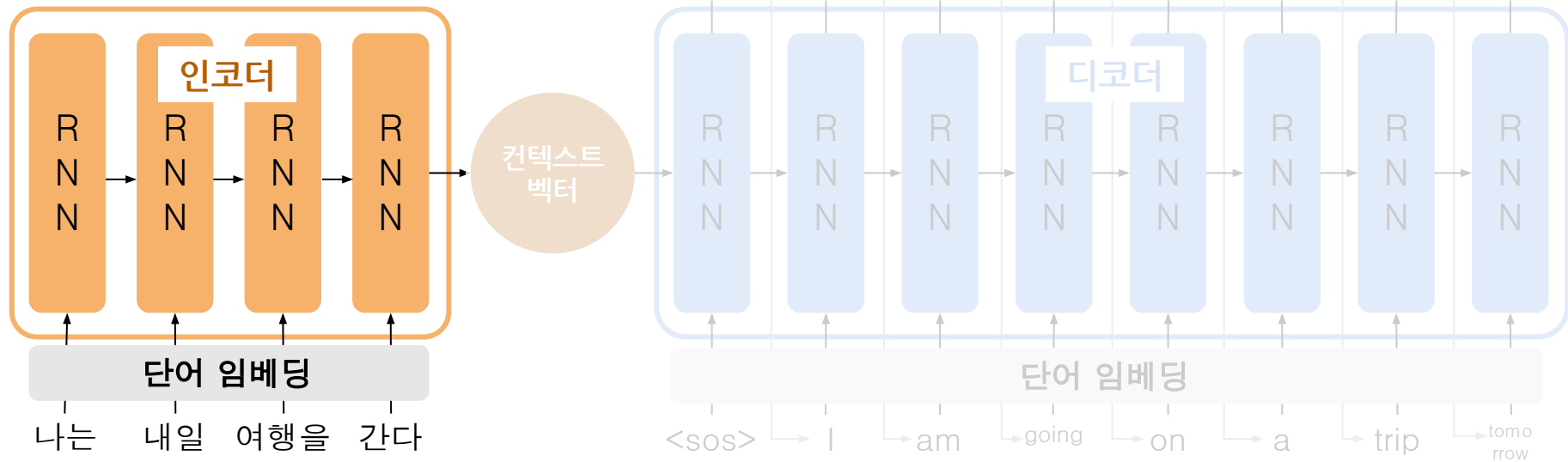
# Seq2Seq (4)



## Seq2Seq (5)

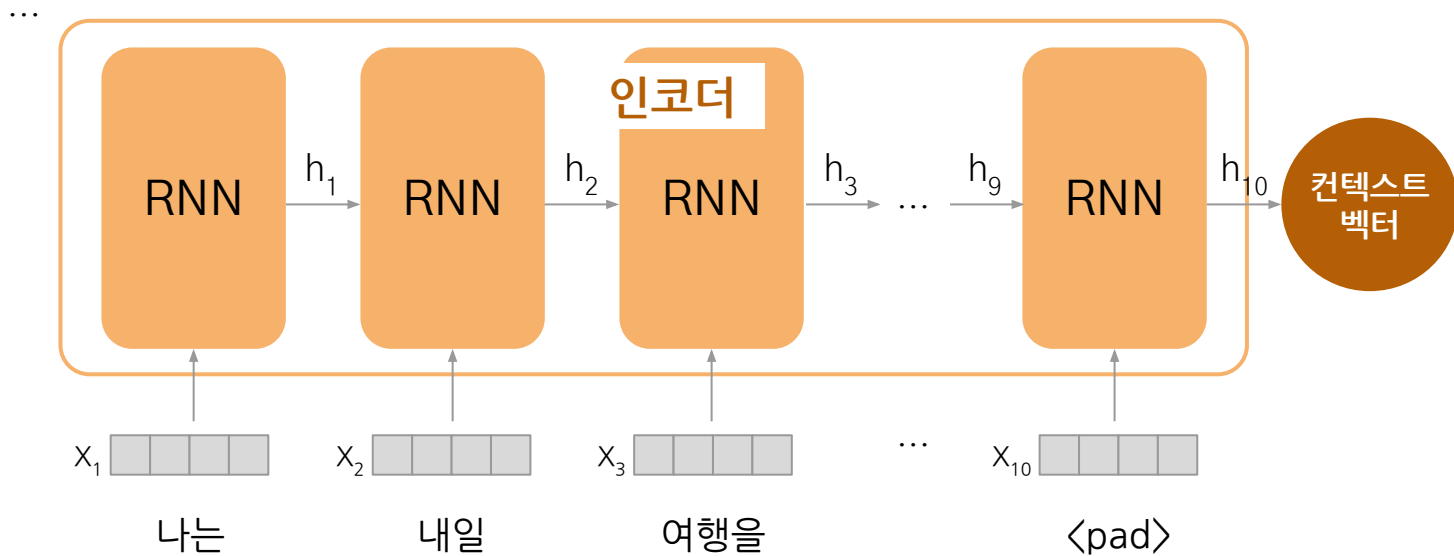


# 인코더

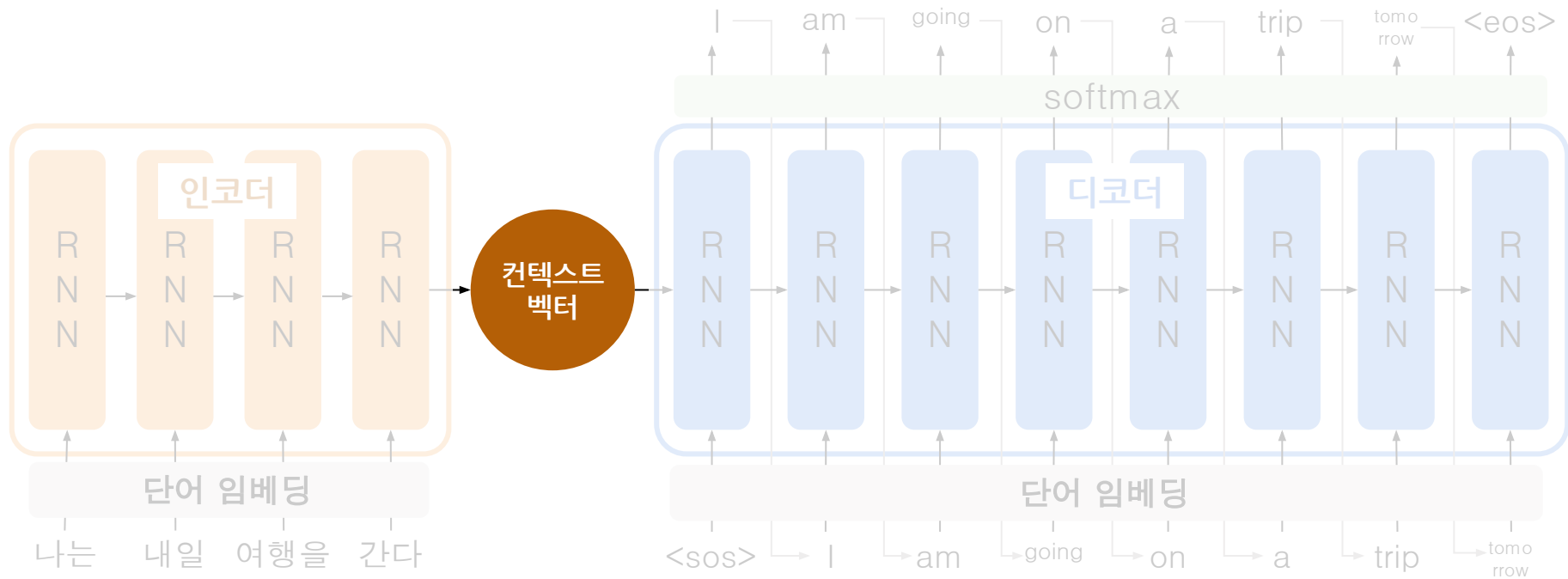




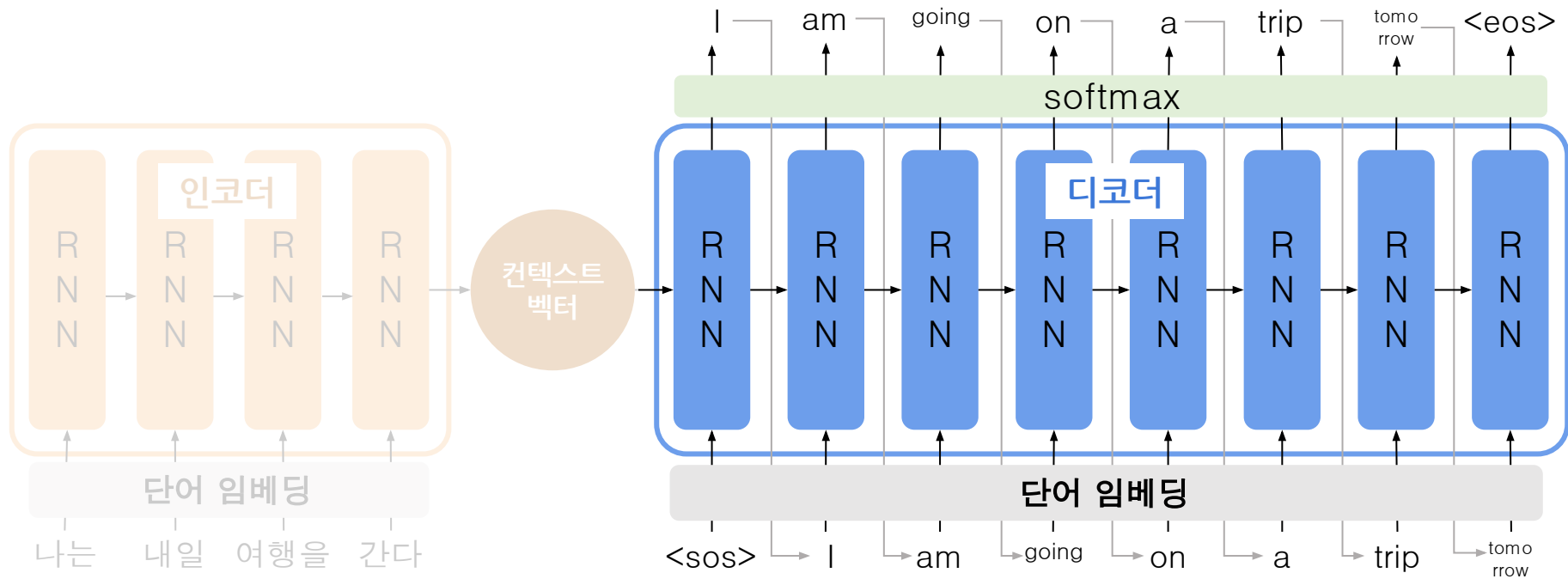
# 인코더



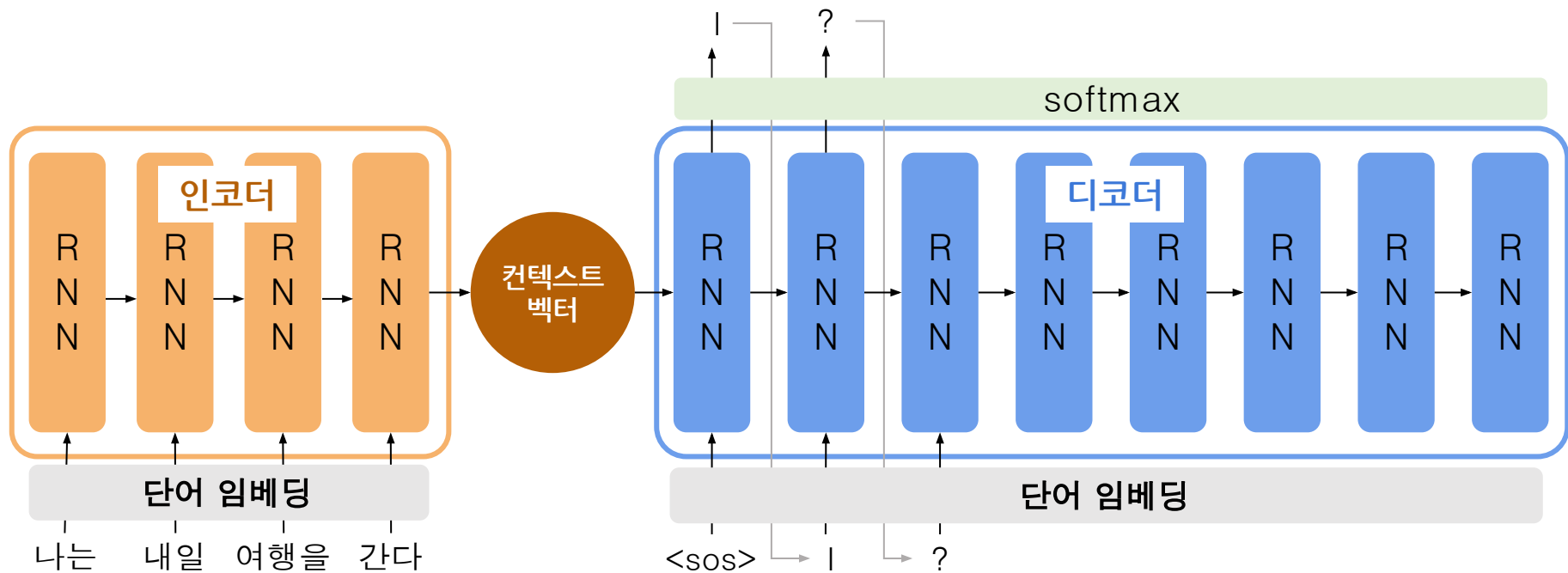
# 컨텍스트 벡터



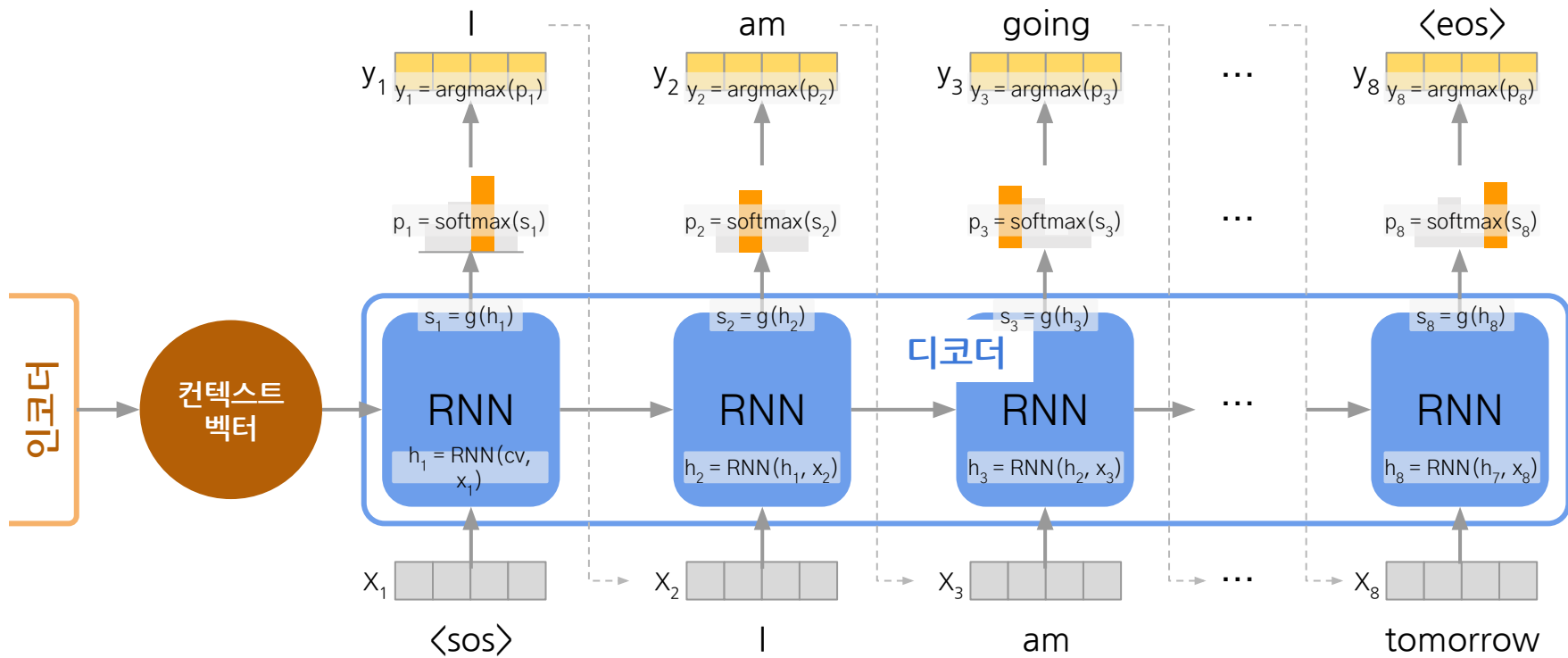
# 디코더 - greedy decoding



# 디코더



## 디코더



# 디코더

$$y_t = \operatorname{argmax}(p_t)$$

최대확률을 가지는 단어 선택

$$p_t = \operatorname{softmax}(s_t)$$

확률 분포 계산

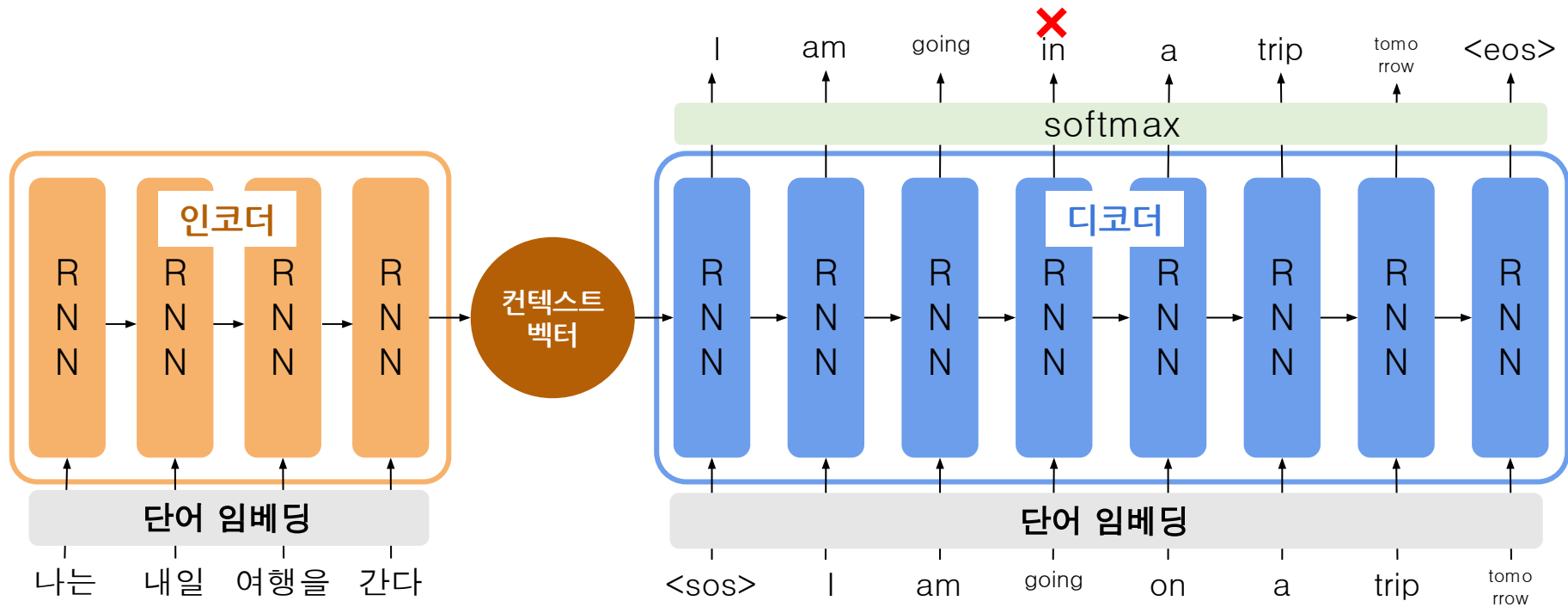
$$s_t = g(h_t)$$

RNN 출력 계산

$$h_t = \operatorname{RNN}(h_{t-1}, x_t)$$

히든스테이트 계산  
 $h_t$ : t시점 히든 스테이트  
 $x_t$ : t시점 입력

# 학습 - Teacher Forcing

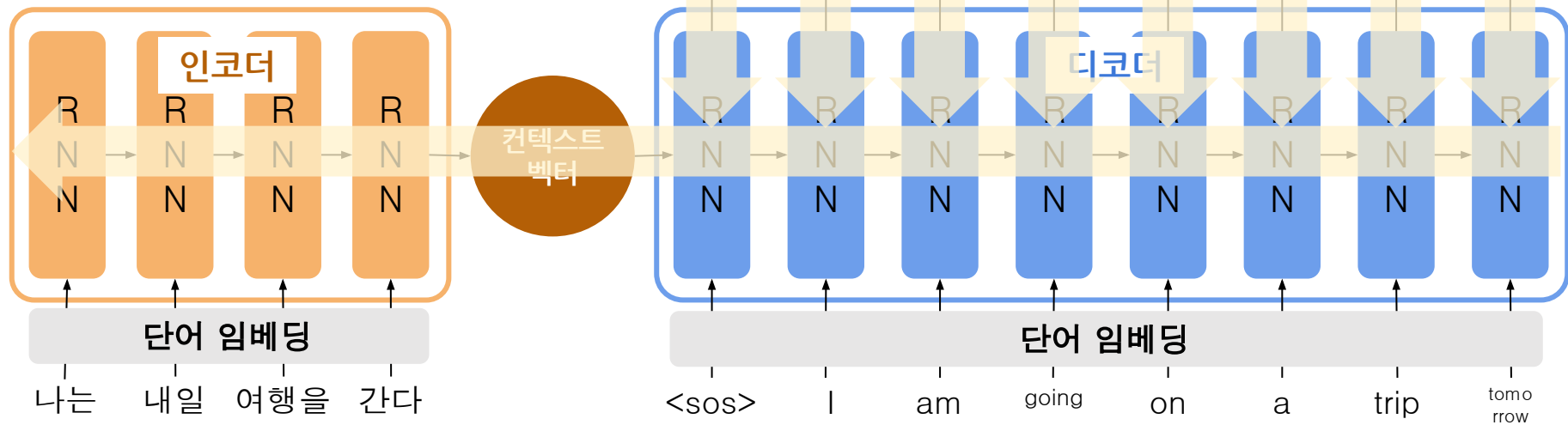


# 학습

cross-entropy

$$J_t = -\sum_{j=1}^K y_{t,j} \log \hat{y}_{t,j}$$

$$J = \frac{1}{T} \sum_{t=1}^T J_t$$



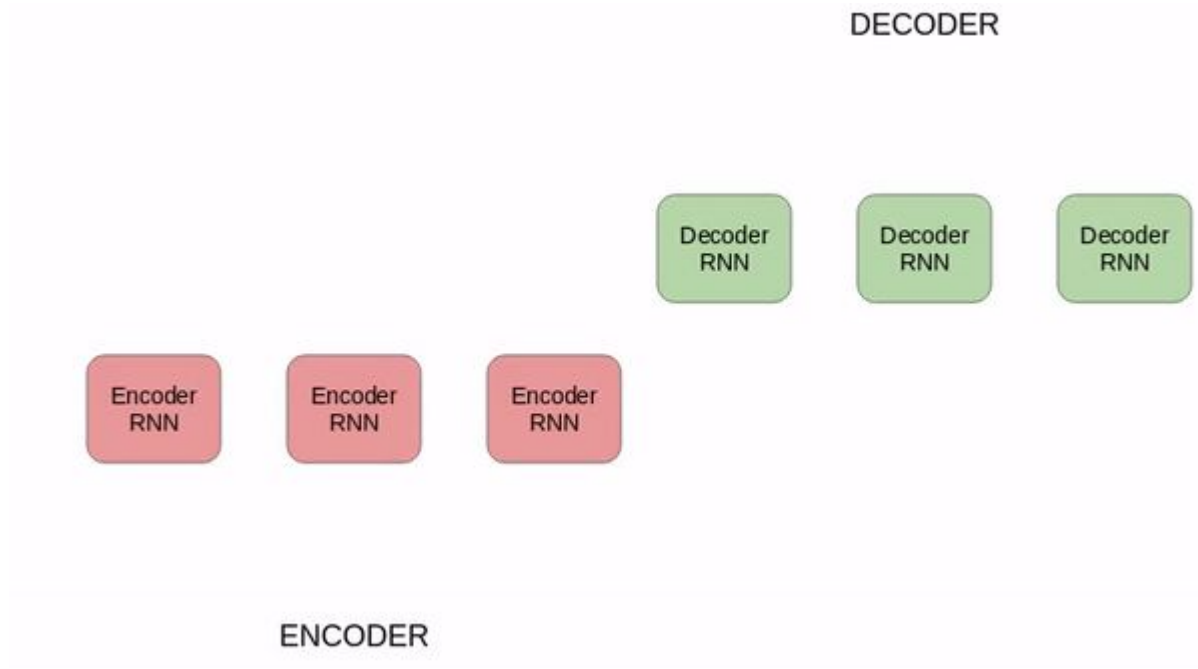


# Seq2Seq 예측 과정 (1)



1. 입력 시퀀스 (Input Sequence)를 생성합니다. 예를 들어, "The cat sat on the mat."과 같은 문장을 토큰화하여 [The, cat, sat, on, the, mat.]로 변환합니다.

# Seq2Seq 예측 과정 (1)



감사합니다.

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Insight<sup>+</sup>campus

