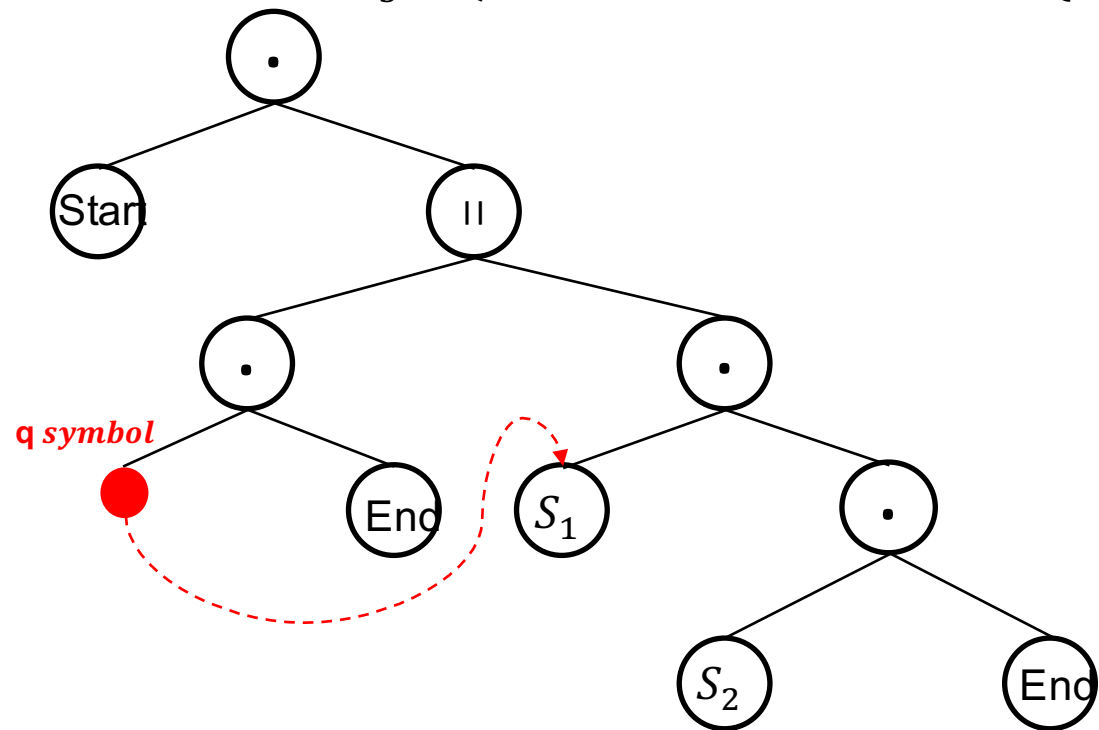
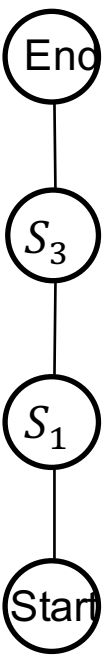


(a) Task 3 $T_3 = (\{\text{academic-item-number}\}, \{\text{maxprice}, \text{book}\})$

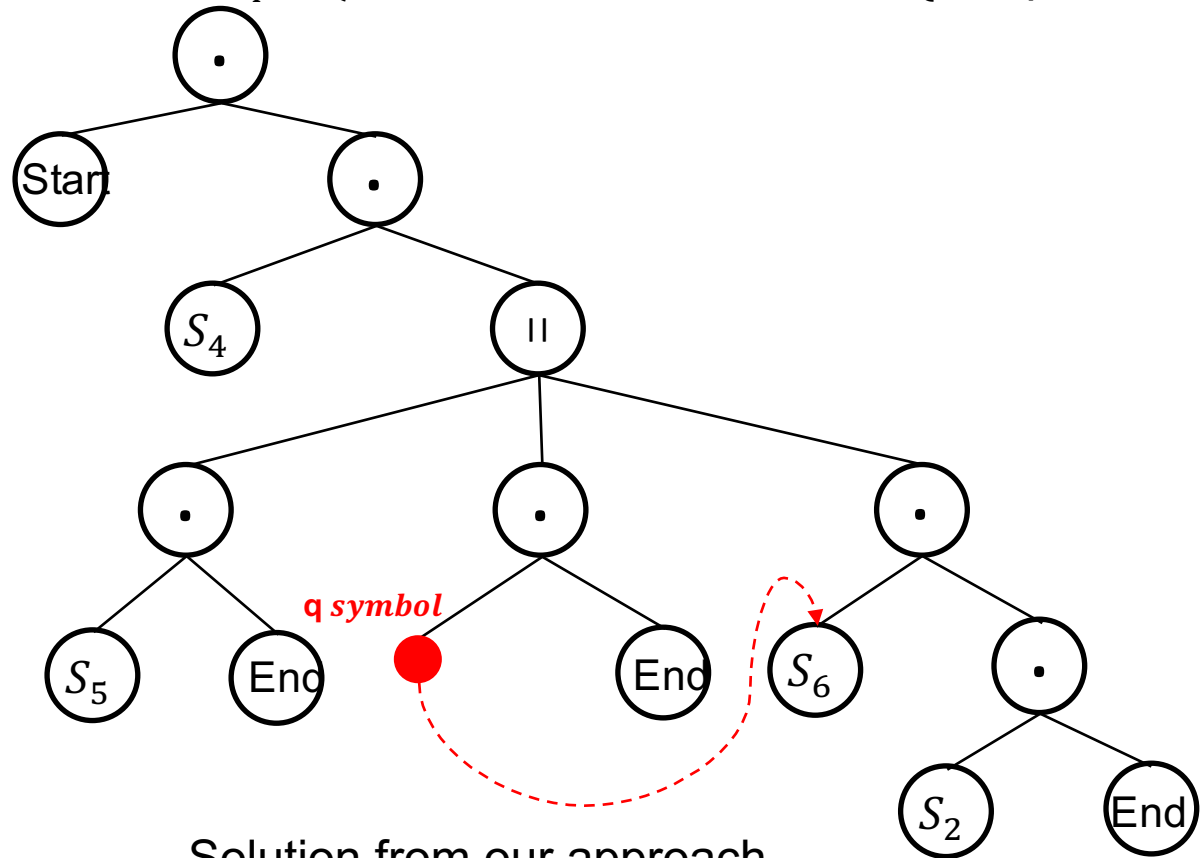


Solution from our approach

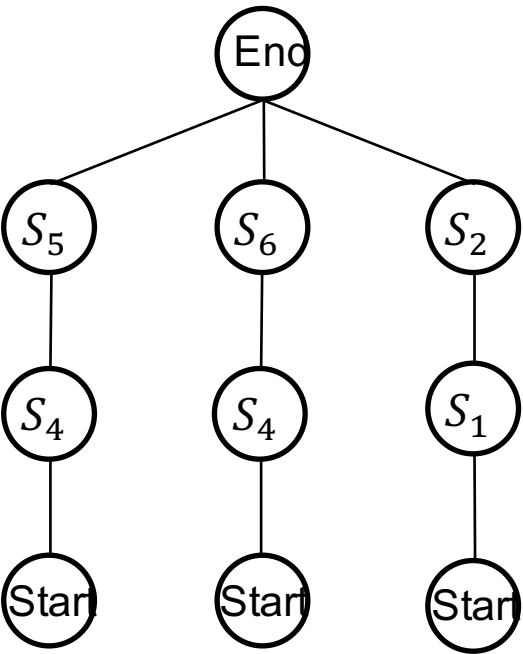


Solution from Ma et al.[10] approach

(b) Task 4 $T_4 = (\{\text{academic-item-number}\}, \{\text{maxprice}, \text{book-type}, \text{recommendedpriceindollar}\})$



Solution from our approach



Solution from Ma et al.[10] approach

(c) Services used in the solutions above

| S. | Atomic web service | Inputs | Outputs | QoS |
|-------|--|----------------------|--------------------------|---------------------------------------|
| S_1 | academic-item-number_bookauthor_service | academic-item-number | auther, book | { t:1765.91, c:6.61, r:0.51,a:0.83 } |
| S_2 | author_publicationmaxprice_service | author | maxprice, publication | { t:828.17, c:1.44, r:0.8, a:0.92 } |
| S_3 | author_bookmaxprice_service | author | maxprice, book | {t:1912.14, c:1.39, r:0.78, a:0.5} |
| S_4 | academicbooknumbersearch | academic-item-number | book | { t:3280.67, c:9.72, r:0.49 a:0.66 } |
| S_5 | tizonbook_recommendedpriceindollar_service | book | recommendedpriceindollar | { t:3025.16, c:3.97r:0.43, a:0.88 } |
| S_6 | book_authorbook-type_service | book | book-type, author | { t:2481.87, c:1.47, r:0.47, a:0.68 } |