Unit 6 - Week 4

Course outline

How does an MITEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Forward Chaining Rule Based Systems

The Rete Algorithm

Programming in Rule Based Language

Programming in Rule Based Language

The OPS5 Expert System Shell

Quiz : Assignment 4

Artificial Intelligence Knowledge Representation and Reasoning Video Feedback Form

Week 5

Week 6

Week 7

(Optional) Knowledge Structures

Week 8

Week 9

Week 10

Week 11

Week 12

Text Transcripts

DOWNLOAD VIDEOS

Books

Assignment 4

The last date(s) for submitting this assignment has passed.
It is no longer possible to submit this assignment.

Due on 2020-02-26, 23:59 IST.

Refer "wff" or "(offline)". Both case-insensitive are accepted as valid representations of infinity, where needed use it to indicate an infinite value. Abbreviations: WM = Working Memory, WME = Working Memory Element, KB = Knowledge Base

1) Rule based production systems like OPS5 _____

1 point

- are based entirely on classical mathematical logic
- go beyond classical logic because one can delete facts
- go beyond classical logic because rules with negation are allowed
- have facts that may change over time/incrementally with application of rules

Yes, the answer is correct.
Accepted Answers:
go beyond classical logic because one can delete facts
have facts that may change over time/incrementally with application of rules

2) In languages like OPS5 _____

1 point

- Facts are statements that can have variables.
- rules are statements that can only have variables.
- facts are statements that can have variables.
- facts are statements that can only have constants.

Yes, the answer is correct.
Accepted Answers:
facts are statements that can have variables.
facts are statements that can only have constants.

3) In languages like OPS5 _____

1 point

- the Working Memory corresponds to short term memory
- the Working Memory corresponds to long term memory
- the set of rules corresponds to short term memory
- the set of rules corresponds to long term memory

Yes, the answer is correct.
Accepted Answers:
the Working Memory corresponds to short term memory
the set of rules corresponds to long term memory

4) In a rule in a language like OPS5 _____

1 point

- the left hand side contains patterns that match working memory elements
- the left hand side contains the actions that are carried out, mostly in data form
- the right hand side contains conclusions of an implication statement
- the right hand side contains actions that can add, modify or delete facts in the KB

Yes, the answer is correct.
Accepted Answers:
the left hand side contains patterns that match working memory elements
the left hand side specify that certain facts must not be present in the KB
the right hand side contains actions that can add, modify or delete facts in the KB

5) The Rete Net _____

1 point

- is a compilation of all rules forming the short term memory
- is a network of facts forming the short term memory
- is a compilation of all rules forming the long term memory
- is a network of facts forming the long term memory

Yes, the answer is correct.
Accepted Answers:
is a compilation of all rules forming the short term memory
is a compilation of all rules forming the long term memory

6) In a Rete Net _____

1 point

- the alpha nodes are assimilative collecting WME tokens that match
- the alpha nodes are discriminative sending tokens along different branches
- the beta nodes are assimilative collecting WME tokens that match
- the beta nodes are discriminative sending tokens along different branches

Yes, the answer is correct.
Accepted Answers:
the alpha nodes are discriminative sending tokens along different branches
the beta nodes are assimilative collecting WME tokens that match

7) The Conflict Resolution strategy MeaTree tries to _____

1 point

- Execute a rule that has the most number of WMEs matched on at least once
- Save distinct rule data tuples in the Conflict Set to picked up at most once
- A rule can fire until a given set of matching WME tokens at most once
- A rule will always fire with a given set of matching WME tokens at most once

Yes, the answer is correct.
Accepted Answers:
Save distinct rule data tuples in the Conflict Set to picked up at most once
A rule can fire until a given set of matching WME tokens at most once

BEGIN GRADED Q8

8) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (output ^key <key>
   (output ^key <key>
   --> (MAKE output ^key 2 ^x 'A' ^y 'A'))

(p rule-2
   (output ^key 2 ^x 'A' ^y 'A')
   --> (REMOVE 1 ^key a ^y a ^z a))

(p rule-3
   (output ^key 2 ^x 'A' ^y 'A')
   --> (MAKE 3)
   (REMOVE 1 ^key a ^y a ^z a))
```

Yes, the answer is correct.
Accepted Answers:
Compiles but runs in an infinite loop

9) Atleast _____

1 point

- It has two parts: P part and THEN part
- P part specifies conditions and THEN part specifies actions
- The first condition in a rule is a WME like (output ^key 1)
- The first condition in a rule is a WME like (output ^key 1) does not exist
- The MAKE action creates a WME
- ^key is an attribute
- The first condition in a rule is bound to the value of ^val
- All occurrences of <x> refer to the same value

Yes, the answer is correct.
Accepted Answers:
P part specifies conditions and THEN part specifies actions
The first condition in a rule is a WME like (output ^key 1)
All occurrences of <x> refer to the same value

10) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

11) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q8

BEGIN GRADED Q9

12) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

13) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q9

Rules `(p p1 ...)` and `(p p2 ...)` are applied to the Working Memory given below.

```
Working Memory:

1. (input ^val 5)
```

Now, compute the snapshots of `(output ^val ...)` WME as each rule fires one by one until the system terminates.

14) After the first rule fires, the value of `^val` is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

15) After the second rule fires, the value of `^val` is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

16) After the third rule fires, the value of `^val` is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 3

17) After the fourth rule fires, the value of `^val` is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 2

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

18) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

19) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

20) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

21) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q10

BEGIN GRADED Q11

22) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

23) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q11

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

24) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

25) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

26) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

27) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q12

BEGIN GRADED Q13

28) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

29) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q13

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

30) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

31) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

32) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

33) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q14

BEGIN GRADED Q15

34) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

35) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q15

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

36) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

37) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

38) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

39) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q16

BEGIN GRADED Q17

40) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

41) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q17

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

42) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

43) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

44) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

45) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q18

BEGIN GRADED Q19

46) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

47) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q19

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

48) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

49) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

50) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

51) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q20

BEGIN GRADED Q21

52) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

53) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q21

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

54) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

55) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

56) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

57) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q22

BEGIN GRADED Q23

58) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

59) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q23

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

60) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

61) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

62) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

63) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q24

BEGIN GRADED Q25

64) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

65) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q25

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

66) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

67) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

68) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

69) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q26

BEGIN GRADED Q27

70) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

71) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q27

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

72) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

73) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

74) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

75) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q28

BEGIN GRADED Q29

76) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

77) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q29

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

78) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

79) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

80) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

81) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q30

BEGIN GRADED Q31

82) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

83) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q31

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

84) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

85) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

86) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

87) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q32

BEGIN GRADED Q33

88) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

89) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q33

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

90) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

91) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

92) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

93) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q34

BEGIN GRADED Q35

94) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

95) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q35

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

96) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

97) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

98) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

99) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q36

BEGIN GRADED Q37

100) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

101) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q37

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

102) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

103) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

104) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

105) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q38

BEGIN GRADED Q39

106) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

107) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q39

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

108) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

109) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

110) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

111) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q40

BEGIN GRADED Q41

112) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (REMOVE 1))
```

Compiles but runs in an infinite loop

113) Given an arbitrary integer input N and the set of three rules above _____

1 point

- Rule 1 will always fire exactly once
- Rule 1 can fire more than once
- Rule 2 will never fire
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all
- Rule 2 will always fire exactly once
- Rule 2 can fire more than once
- Rule 2 may not fire at all

Yes, the answer is correct.
Accepted Answers:
Rule 1 can fire more than once
Rule 2 will always fire exactly once
Rule 2 may not fire at all

END GRADED Q41

Consider the Working Memory shown above below.
Rules `(p p1 ...)` and `(p p2 ...)` are applied to each of the two states independently.

Working Memory 1	Working Memory 2
1. (input ^val 5.5)	1. (input ^val 5.5)
2. (output ^val 5)	

Fill in the blanks with an unsigned integer value.

114) For case 1, `(output ^val ...)` fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 5

115) For case 1, rule 2 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

116) For case 1, rule 1 fires _____ time.

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 4

117) For case 1, the final value of `^val` in (output ^val ...) is: _____

1 point

Yes, the answer is correct.
Accepted Answers:
Type: Numeric 10

END GRADED Q42

BEGIN GRADED Q43

118) Consider the following OPS5 program _____

1 point

```
(p rule-1
   (input ^val <x>)
   (output ^key 1 ^val <x>)
   --> (MAKE output ^key 2 ^val <x>))

(p rule-2
   (output ^key 2 ^val <x>)
   --> (RE
```