

Problem Set 6.2: Due March 24

1. (5 points) Describe how feature “one-spot-east” created by the rules below differ.

```
sp {rule*a
  (state <s> ^io.input-link.eater.x <x>)
-->
  (<s> ^one-spot-east (+ <x> 1))}
```

```
sp {rule*b
  (state <s> ^io.input-link.eater.x <x>
    ^operator <o>)
  (<o> ^name <n>)
-->
  (<s> ^one-spot-east (+ <x> 1))}
```

2. (5 points) Describe what will happen if this rule is added to a Soar rule-base:

```
sp {nothing*implies*something
  (state <s> ^superstate nil -^something *yes*)
-->
  (<s> ^something *yes*)}
```

3. (5 points) Consider the operator proposal below:

```
sp {go-somewhere-else
  (state <s> ^io.input-link.eater <e>)
  (<e> ^x <x> ^y <y>)
-->
  (<s> ^operator <o> + > =)
  (<o> ^name go-elsewhere)}
```

If this operator is selected (and this is the only rule that proposed it or set its preference) when/under what circumstances would the operator “finish”?

4. (5 points) Consider the “name” feature added below. Is this working memory element I supported or O supported? Will it ever be removed from working memory?

```
sp {elaborate*name
  (state <s> ^superstate nil)
-->
  (<s> ^name robot)}
```

5. (5 points) Consider the “name” feature added below. Is this working memory element I supported or O supported? Will it ever be removed from working memory?

```

sp {elaborate*name
  (state <s> ^superstate nil)
  -->
  (<s> ^name robot)}

```

6. (5 points) Consider the two rules below. How many operators will be proposed? In general how can we tell?

```

sp {elaborate
  (state <s> ^superstate nil)
  -->
  (<s> ^direction <d>)
  (<d> ^dir north ^dir south ^dir east ^dir west)}

```

```

sp {propose
  (state <s> ^direction <d>)
  (<d> ^dir <x>)
  -->
  (<s> ^operator <o> + = )
  (<o> ^name move ^direction <x>)}

```

7. (5 points) Consider the three rules below. How many “feature-1” and “feature-2” attributes will be created; why does this behavior makes sense? Assume that the right hand side function *make-constant-symbol* creates a unique string each time it is invoked.

```

sp {elaborate*1
  (state <s> ^superstate nil)
  -->
  (<s> ^direction <d>)
  (<d> ^dir north ^dir south ^dir east ^dir west)}

```

```

sp {elaborate*2
  (state <s> ^direction <d>)
  (<d> ^dir <x>)
  -->
  (<s> ^feature-1 1)}

```

```

sp {elaborate*3
  (state <s> ^direction <d>)
  (<d> ^dir <x>)
  -->
  (<s> ^feature-2 (make-constant-symbol))}

```