

$P = ['?a', 'my', 'name', 'is', '?+name']$ ,  $I = ['Hello', 'my', 'name', 'is', 'Asif', 'Ali', 'khan']$ ,  $B = None$

$SV = a$ ,  $SP = ['my', 'name', 'is', '?+name']$ ,  $SI = ['Hello', 'my', 'name', 'is', 'Asif', 'Ali', 'khan']$

$SB = None$

$P = ['my', 'name', 'is', '?+name']$ ,  $I = ['my', 'name', 'is', 'Asif', 'Ali', 'khan']$ ,  $B = \{ 'a': ['Hello'] \}$

~~Body~~  $P = my$ ,  $I = my$ ,  $B = \{ 'a': ['Hello'] \}$

$P = ['name', 'is', '?+name']$ ,  $I = ['name', 'is', 'Asif', 'Ali', 'khan']$ ,  $B = \{ 'a': ['Hello'] \}$

"  $P = name$ ,  $I = name$ ,  $B = \{ 'a': ['Hello'] \}$

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$P = ['is', '?name']$ ,  $I = ['is', 'Asif', 'Ali', 'khan']$ ,

$B = \{ 'a': ['Hello'] \}$

$P = is$ ,  $I = is$ ,  $B = \{ 'a': ['Hello'] \}$

$P = ['?name']$ ,  $I = ['Asif', 'Ali', 'khan']$ ,

$B = \{ 'a': ['Hello'] \}$

$SV = name$ ,  $SP = []$ ,  $SI = ['Asif', 'Ali', 'khan']$

P-

$P = []$ ,  $I = []$ ,  $B = \{ 'a': ['Hello'], 'name': ['Asif', 'Ali', 'khan'] \}$

Final output

$B = \{ 'a': ['Hello'], 'name': ['Asif', 'Ali', 'khan'] \}$



Q No 2

Sol:-

input: ['Fran', 'age', 'divided', 'by', 'Robin', 'height', 'is', 'one', 'half', 'of', 'Kelly', '10']

Rule: ['?x a', 'is', '?x b'], ['a' = 'b']

Binding: { 'a': ['Fran', 'age', 'divided', 'by', 'Robin', 'height'],  
          'b': ['one', 'half', 'of', 'Kelly', '10'] }

input: ['Fran', 'age', 'divided', 'by', 'Robin', 'height']

Rule: ['?x a', 'divided by', '?x b'], ['?a' = '?b']

Binding: { 'a': ['Fran', 'age'],  
          'b': ['Robin', 'height'] }

input: ['Fran', 'age']

output: ['Fran']

input: ['Robin', 'height']

output: ['Robin']

output: ['Fran', '1', 'Robin']

input: ['one', 'half', 'of', 'Kelly', '10']

Rule: ['one', 'half', '?x a'], [~~1/2~~, 'a'], '1', '2']

Binding: { 'a': ['Kelly', '10'] }

input: ['Kelly', '10']

output: ['Kelly']

output: ['Kelly', '1', '2']

output: ['Fran', '1', 'Robin', '=', 'Kelly', '1', '2']



input: ['kelly', '10', 'minus', '30', 'is', 'Robin', 'height']  
 Rule: ['?x a', '=', '?x b'], ['?a', '=', '?b']  
 Bindings: { 'a': ['kelly', '10', 'minus', '30'],  
               'b': ['Robin', 'height'] }

input: ['kelly', '10', 'minus', '30']  
 Rule: ['?x a', '?x b'], ['?a', '-', '?b']  
 Bindings: { 'a': ['kelly', '10'],  
               'b': ['30'] }

input: ['kelly', '10']  
 output: ['kelly']  
 output: ['kelly', '-', '30']

input: ['Robin', 'height']  
 output: ['Robin']  
 output: ['kelly', '-', '30', '=', 'Robin']

input: ['Robin', 'is', '4', 'feet', 'tall']  
 Rule: ['?x a', 'is', '?x b'], ['?a', '=', '?b']  
 Binding: { 'a': ['Robin'],  
               'b': ['4', 'feet', 'tall'] }

input: ['Robin']  
 output: ['Robin']  
 input: ['4', 'feet', 'tall']  
 output: ['4']  
 output: ['Robin', '=', '4']



input ['how', 'old', 'is', 'fran']  
 Rule ['?x a', '?s', '?x b'], ['?a', '=', '?b']  
 Bindings { 'a' : ['how', 'old'],  
 'b' : ['fran'] }

input ['how', 'old']  
 output ['how']  
 input ['fran']  
 output ['fran']  
 output ['how', '=', 'fran']

Out of Translate to Expression Module

Unsolved Equation First call

- 1 (fran/robin) = (kelly/2)
- 2 (kelly - 30) = Robin
- 3 Robin = 4
- 4 how = fran

Solved Equation

selected  $\rightarrow$  robin = 4

Isolated  $\rightarrow$  robin = 4

Solve Arithmetic ~~Equation~~  $\rightarrow$  robin = 4

Substitution and recursive call

Second call



Unsolved Equation

Solved Equation

```
[
  Fran / 4 = Kelly / 2
  (Kelly - 30) = Robin 4
  Rob how = Fran
]
```

```
[
  robin = 4
]
```

selected  $\rightarrow (kelly - 30) = 4$   
 isolated  $\rightarrow kelly = 4 + 30$   
 Solve Arithmetic  $\rightarrow kelly = 34$   
 Substitution and Recursive call

Unsolved Equation **third cell**

Solved Equation

```
[
  (Fran / 4) = (34 / 2)
  34 = 300
  how = Fran
]
```

```
[
  (robin = 4),
  (kelly = 34)
]
```

selected equation  $\rightarrow (Fran / 4) = (34 / 2)$   
 isolated  $\rightarrow Fran \cdot Fran = (34 / 2) * 4$   
 Solve Arithmetic  $\rightarrow Fran = 68.0$   
 Substitution and Recursive call

Unsolved Equation **Fourth cell**

Solved Equation

```
[
  how = 68 68.0
]
```

```
[
  robin = 4
  kelly = 34
  Fran = 68.0
]
```

selected  $\rightarrow how = 68.0$   
 isolated  $\rightarrow how = 68.0$   
 Solve Arithmetic  $\rightarrow how = 68.0$   
 Substitution and Recursive call



## Fifth call

unsolved Equation

[  
]

Solve Equation

[

robin = 4

kelly = 34

Fron = 68.0

how = 68.0

]