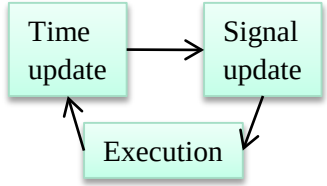
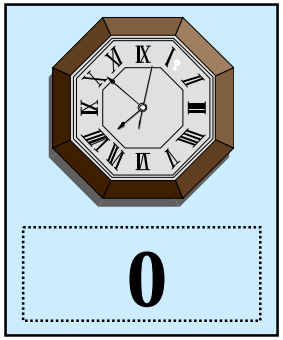
Event-driven simulation step by step



CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

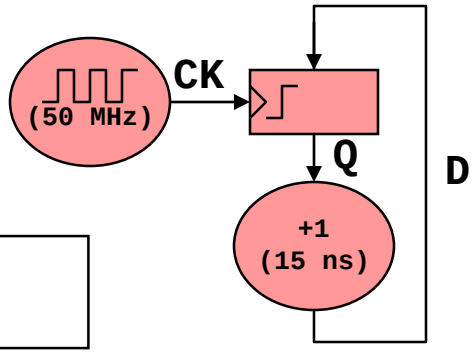
1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

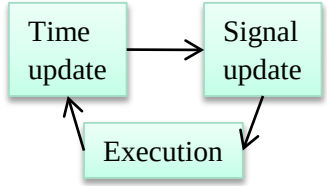
Q

0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



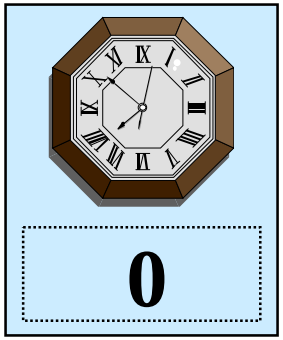
Event-driven simulation step by step



CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

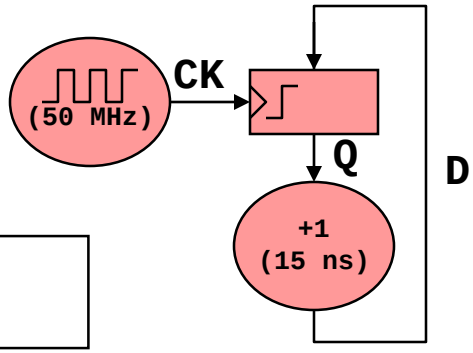
1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

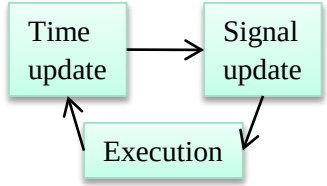
Q

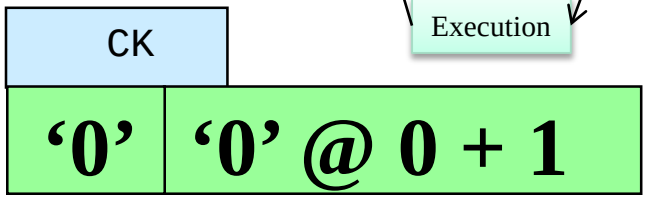
0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

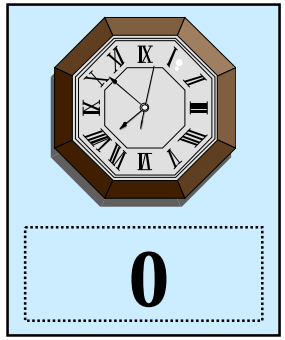


Event-driven simulation step by step



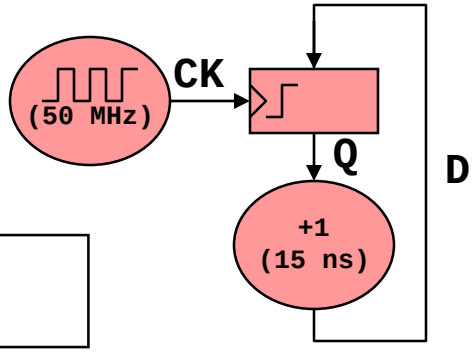



```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

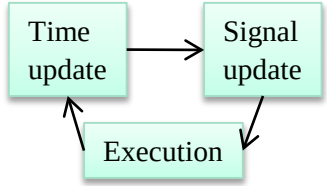



```
wait on Q;
D <= Q + 1 after 15 ns;
```


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

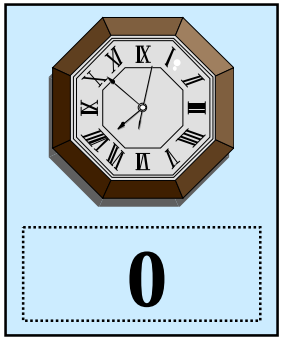


CK

‘0’	‘0’ @ 0 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10



D

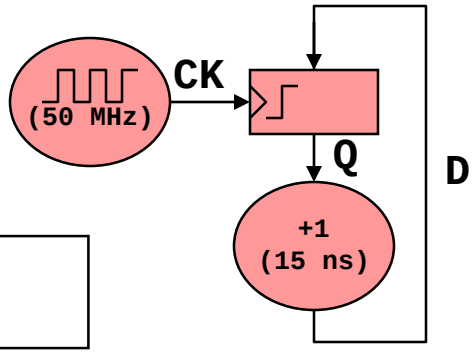
1	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

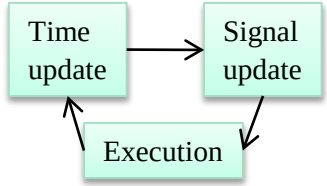
Q

0	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

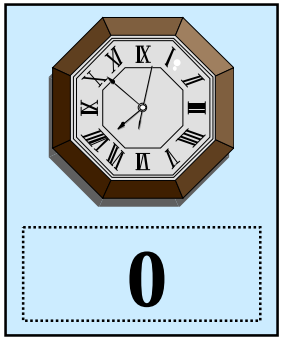


CK

‘0’	‘0’ @ 0 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10



D

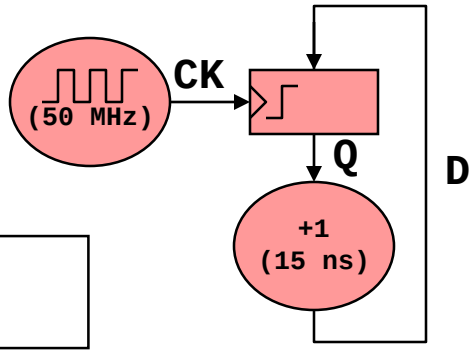
1	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

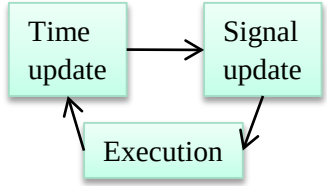
Q

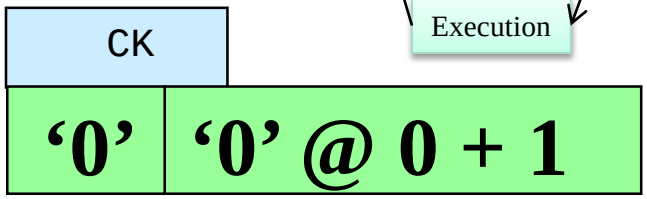
0	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



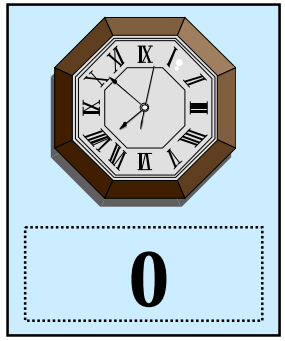
Event-driven simulation step by step






```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

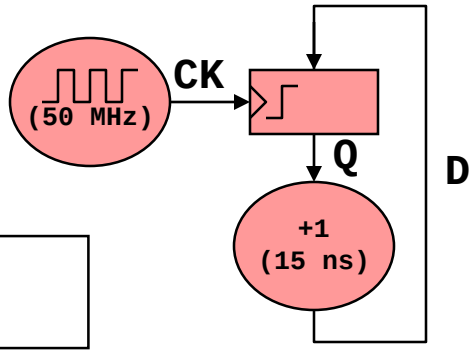
T=10



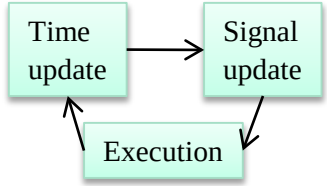

```
wait on Q;
D <= Q + 1 after 15 ns;
```

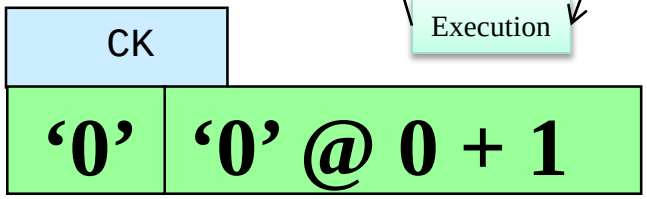
Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



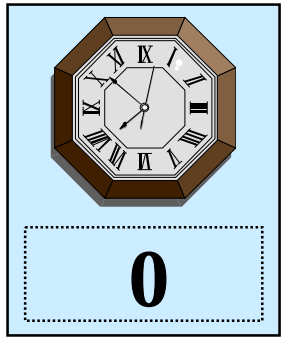
Event-driven simulation step by step






```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

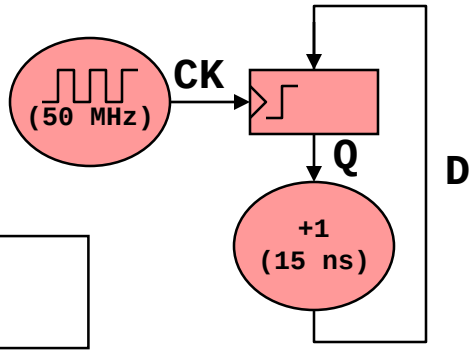
T=10



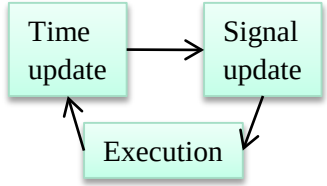

```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



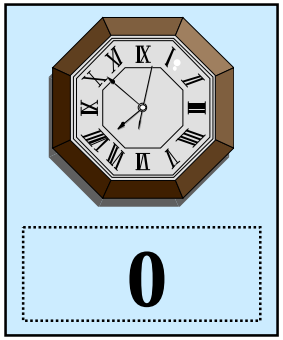
Event-driven simulation step by step



CK	
‘0’	‘0’ @ 0 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10



D	
1	

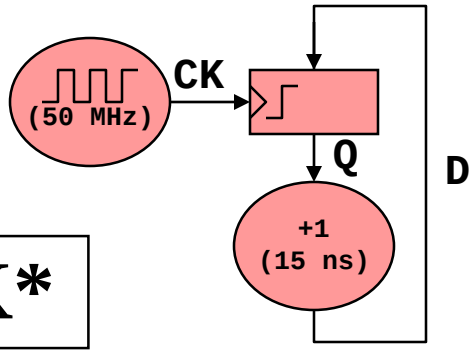
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

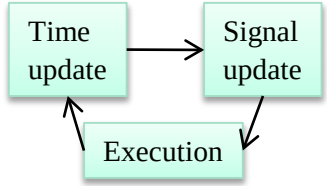
Q	
0	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



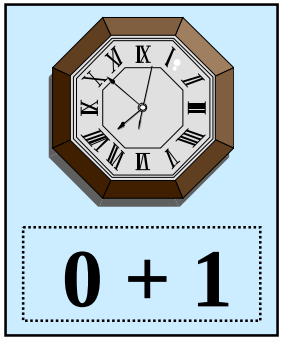
Event-driven simulation step by step



CK	
‘0’	‘0’ @ 0 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10



D	
1	

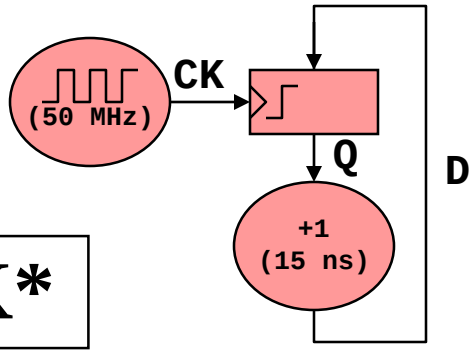
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

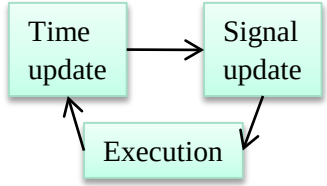
Q	
0	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

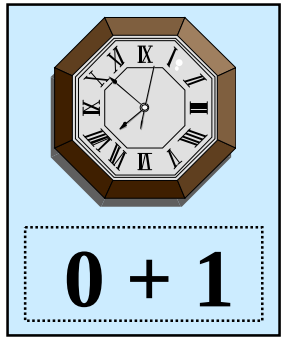


Event-driven simulation step by step




```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10

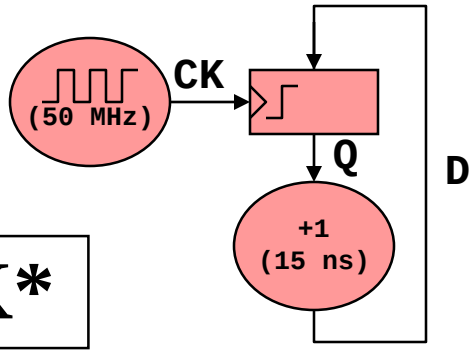



```
wait on Q;
D <= Q + 1 after 15 ns;
```

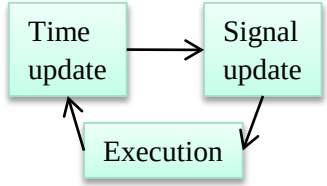
Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

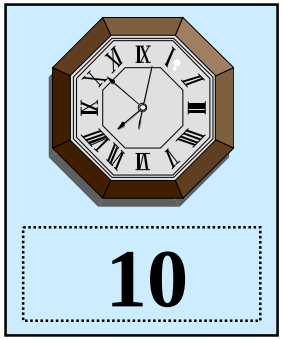


CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=10



D

1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

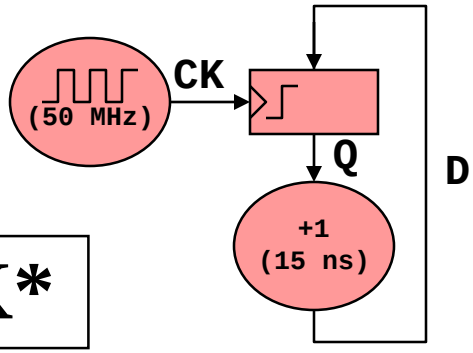
Q*

Q

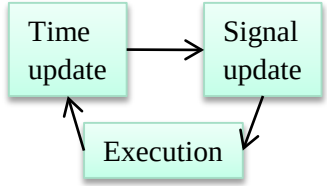
0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

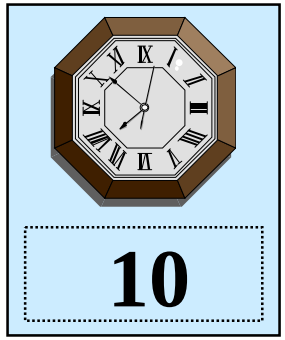


Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=10

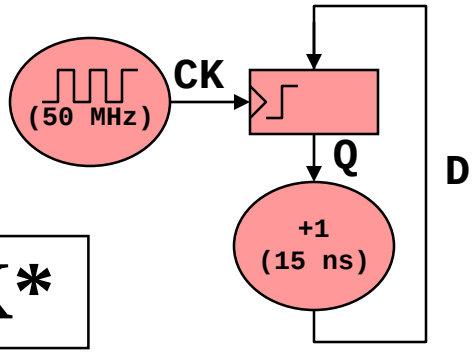



```
wait on Q;
D <= Q + 1 after 15 ns;
```

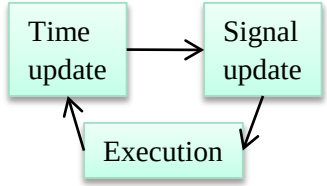
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



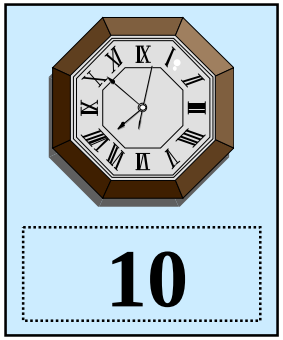
Event-driven simulation step by step



CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

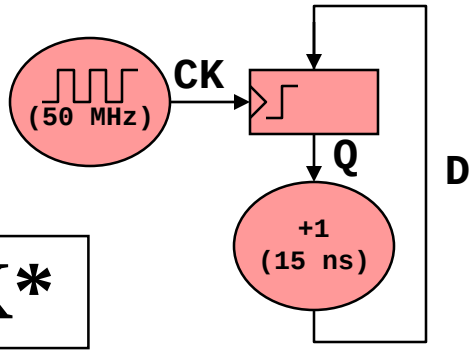
Q*

Q

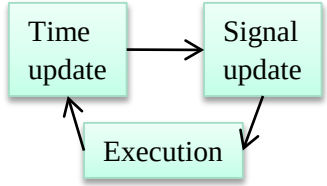
0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



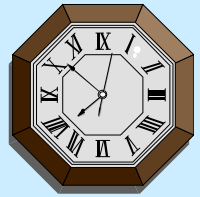
Event-driven simulation step by step



CK

‘0’ | ‘1’ @ 10 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



10

D

1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

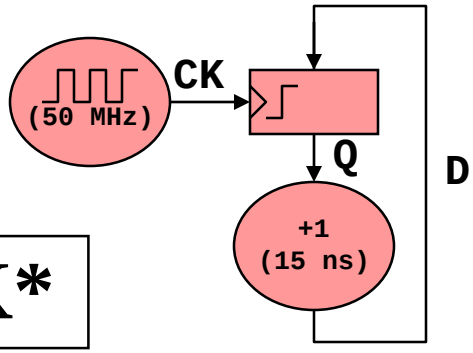
Q*

Q

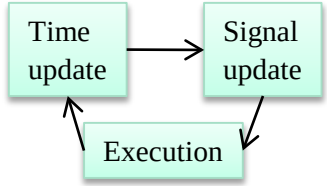
0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

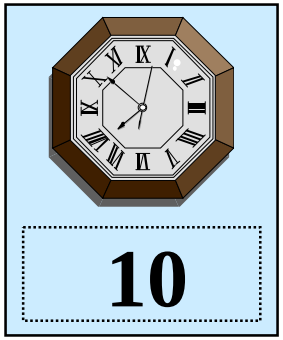


CK

‘0’ | ‘1’ @ 10 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

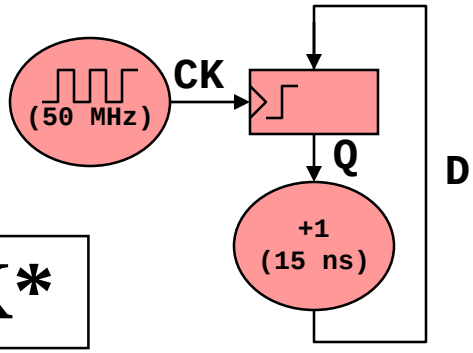
Q*

Q

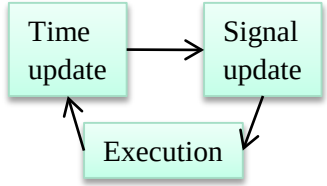
0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

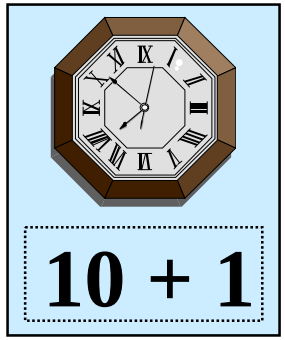


Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=20

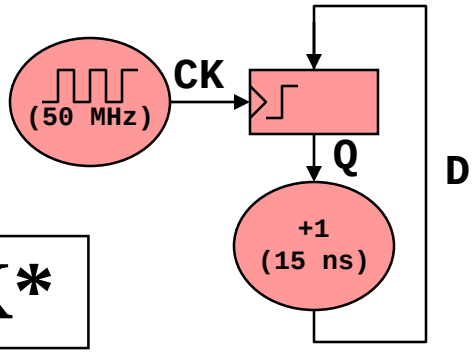



```
wait on Q;
D <= Q + 1 after 15 ns;
```

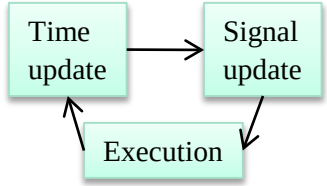
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

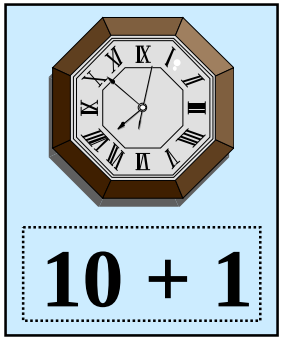


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1

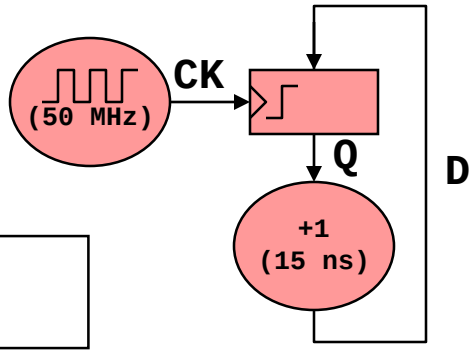
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

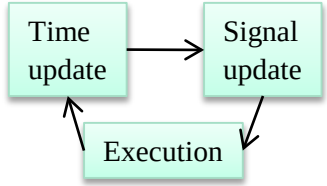
Q

0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

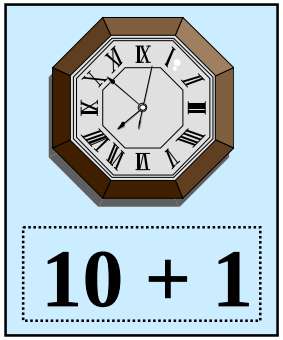


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1

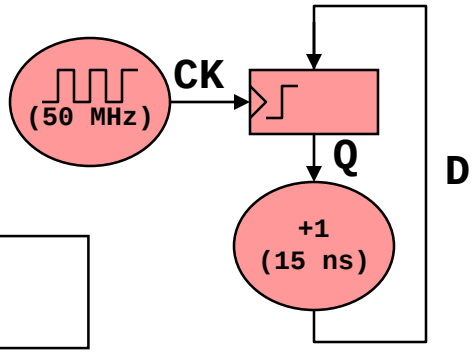
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

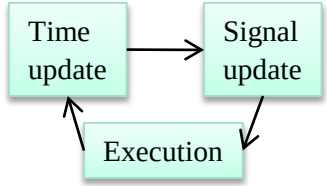
Q

0

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



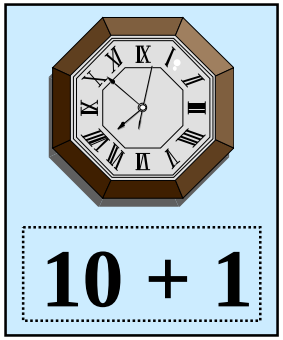
Event-driven simulation step by step



CK
‘1’	

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



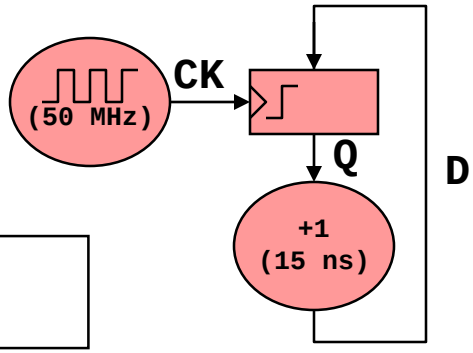
D
1	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

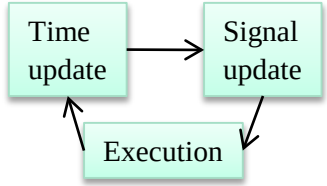
Q*

Q
0	1 @ 10 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



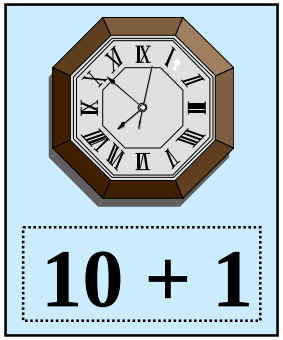
Event-driven simulation step by step



CK
‘1’	

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



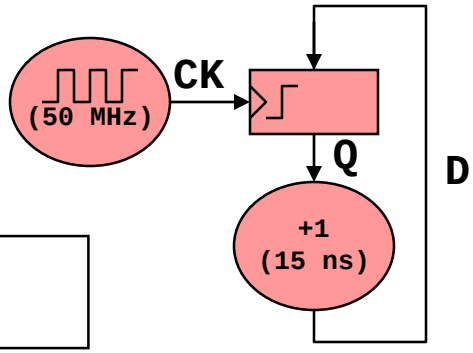
D
1	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

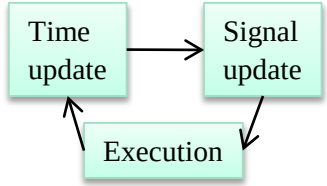
Q*

Q
0	1 @ 10 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

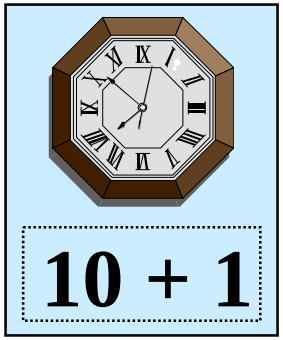


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1

```
wait on Q;
D <= Q + 1 after 15 ns;
```

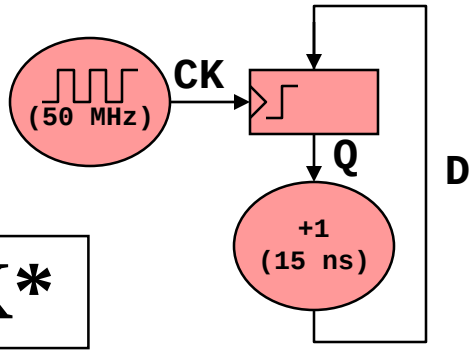
Q*

Q

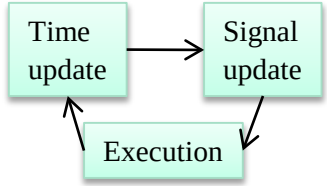
0 | 1 @ 10 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

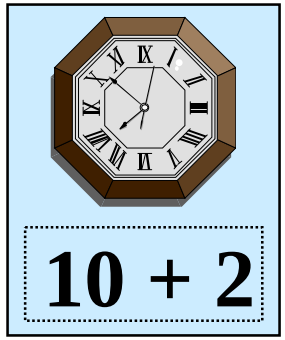


Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=20

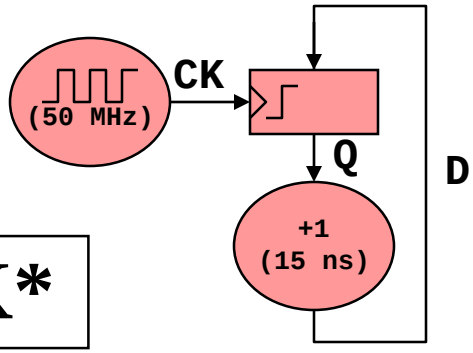



```
wait on Q;
D <= Q + 1 after 15 ns;
```

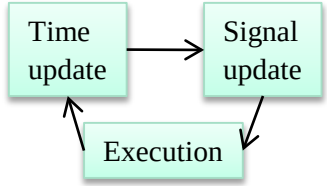
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

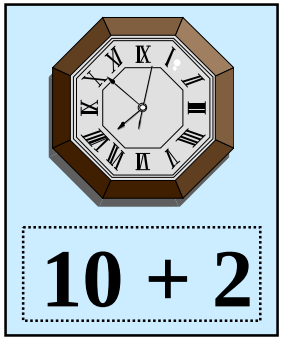


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1

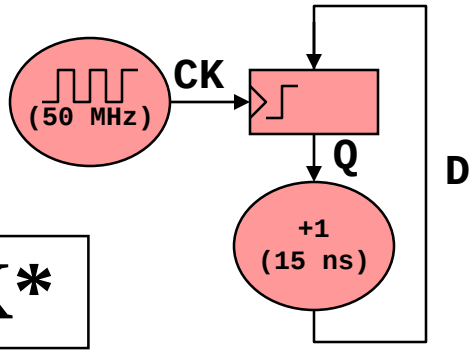
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q

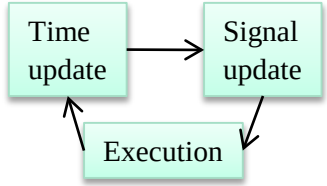
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

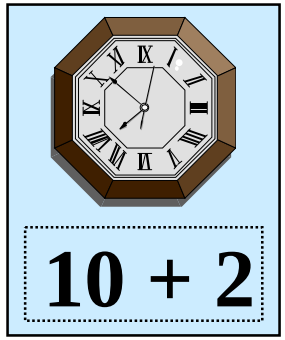


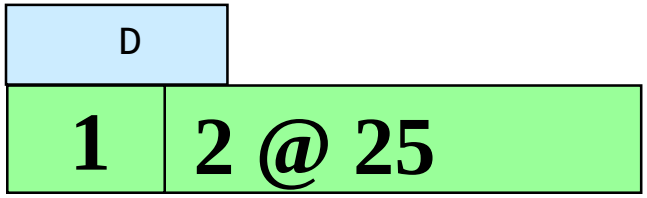
Event-driven simulation step by step




```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20

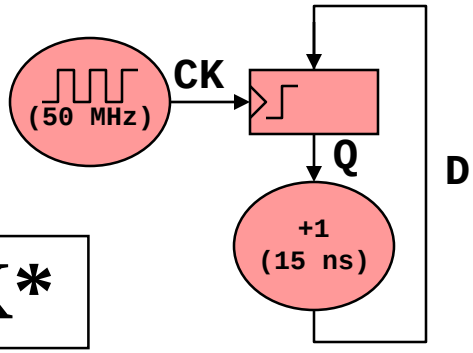




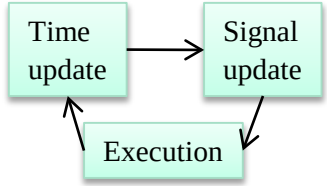

```
wait on Q;
D <= Q + 1 after 15 ns;
```


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

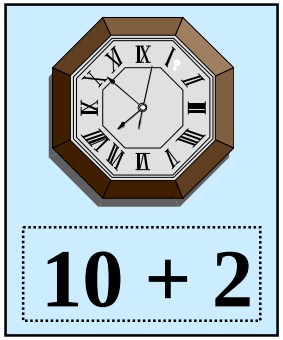


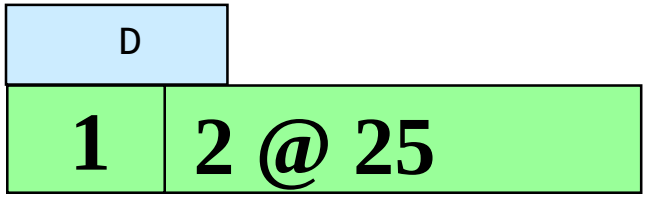
Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=20



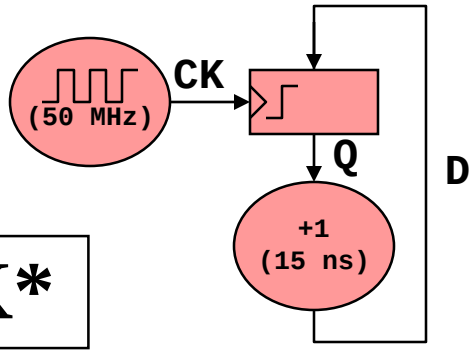



```
wait on Q;
D <= Q + 1 after 15 ns;
```

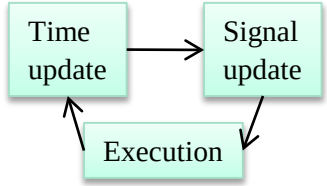
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

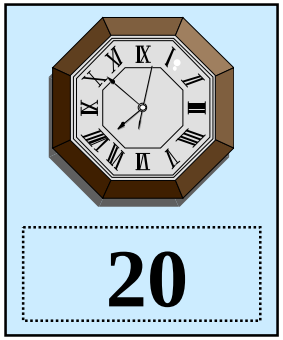


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=20



D

1 | 2 @ 25

```
wait on Q;
D <= Q + 1 after 15 ns;
```

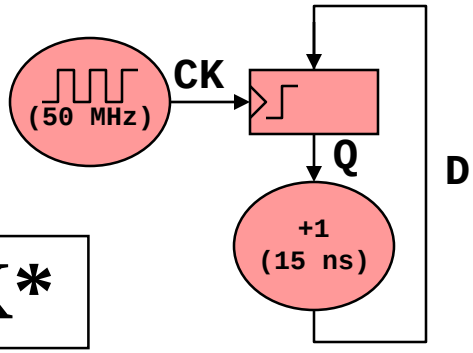
Q*

Q

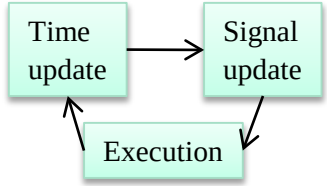
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



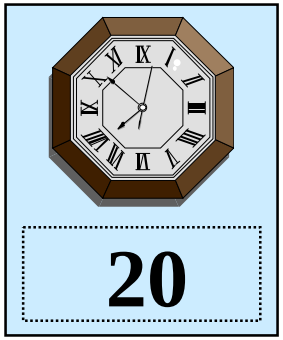
Event-driven simulation step by step



CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

1 | 2 @ 25

```
wait on Q;
D <= Q + 1 after 15 ns;
```

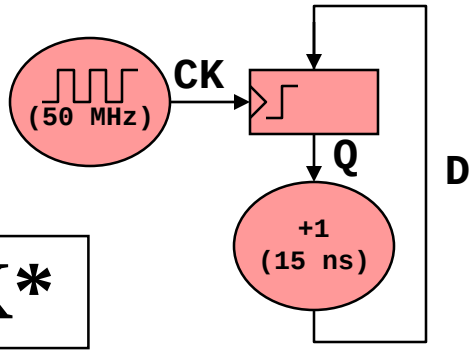
Q*

Q

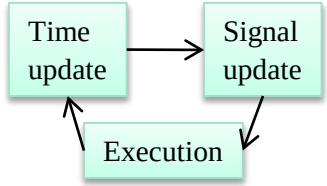
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

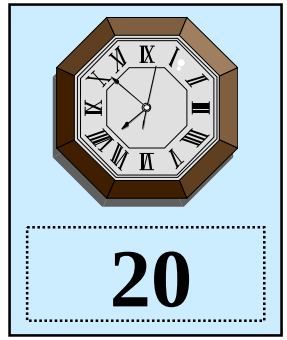


Event-driven simulation step by step



CK	
‘1’	‘0’ @ 20 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D	
1	2 @ 25

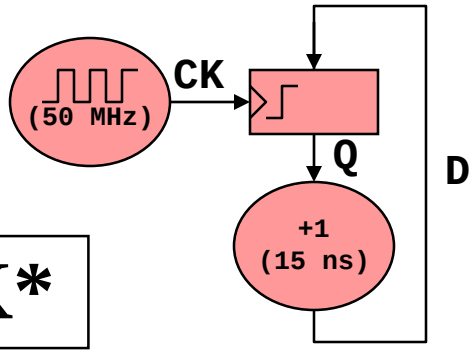
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

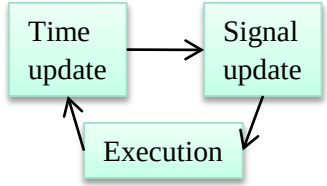
Q	
1	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



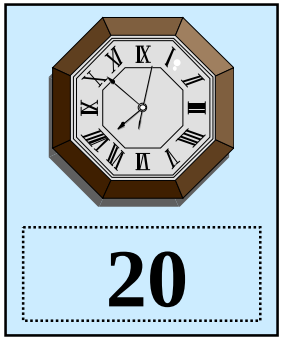
Event-driven simulation step by step



CK	
‘1’	‘0’ @ 20 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30



D	
1	2 @ 25

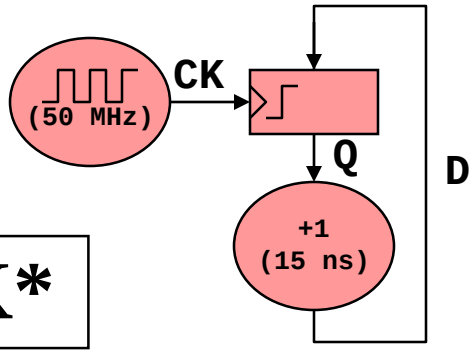
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

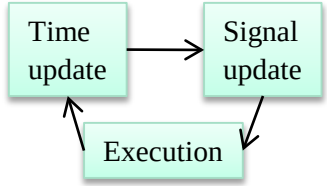
Q	
1	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

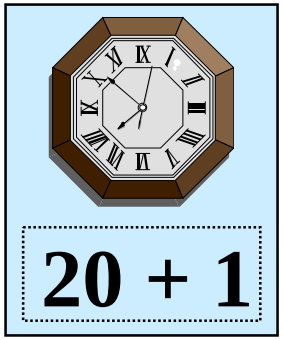


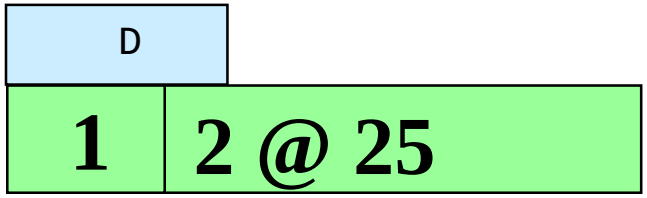
Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=30



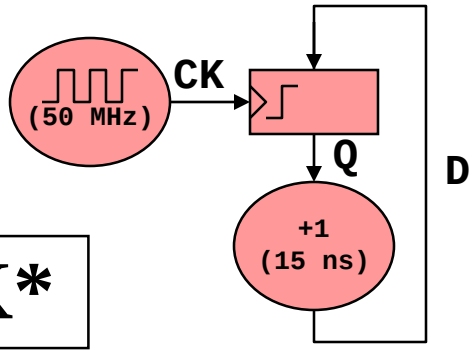



```
wait on Q;
D <= Q + 1 after 15 ns;
```

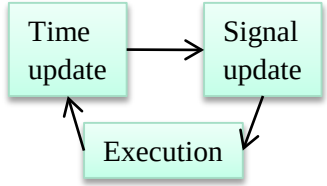
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

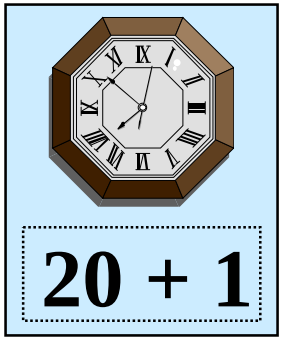


CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30



D

1 | 2 @ 25

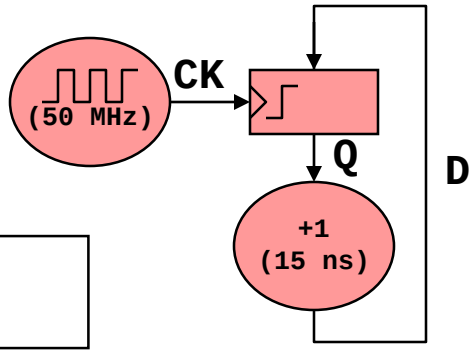
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

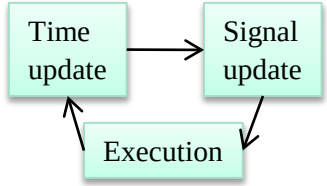
Q

1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

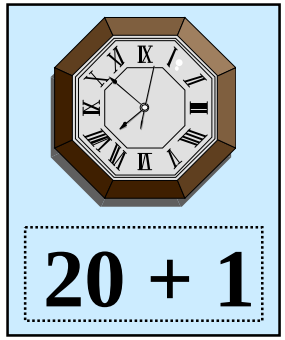


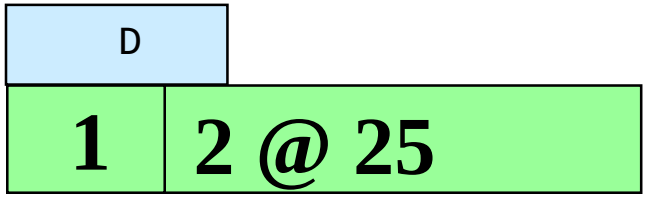
Event-driven simulation step by step




```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30

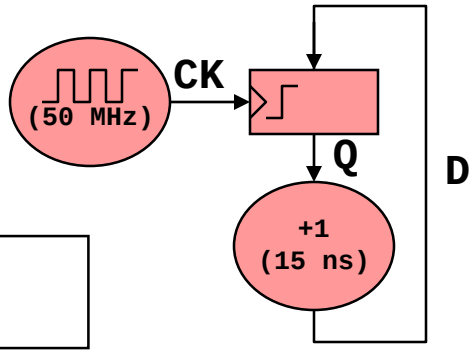




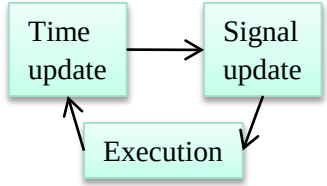

```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

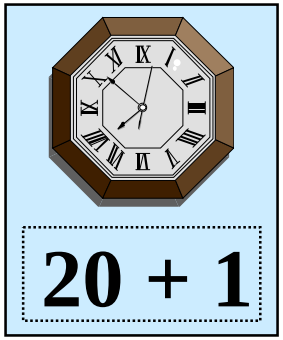


CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30



D

1 | 2 @ 25

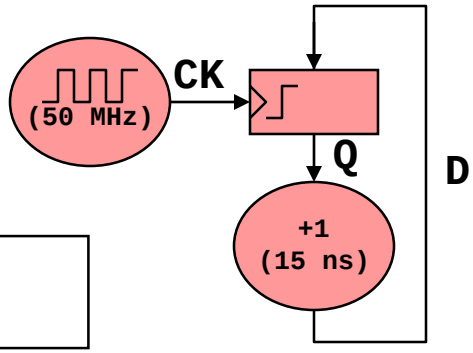
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

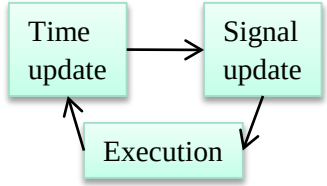
Q

1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

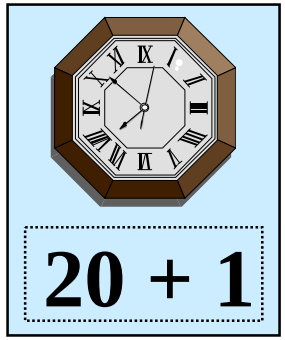


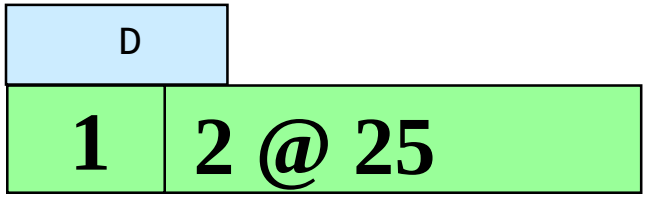
Event-driven simulation step by step




```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30



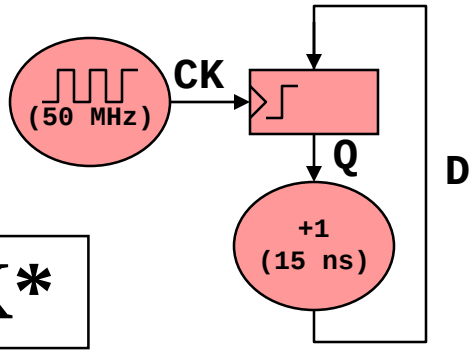



```
wait on Q;
D <= Q + 1 after 15 ns;
```

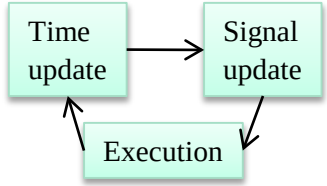
Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

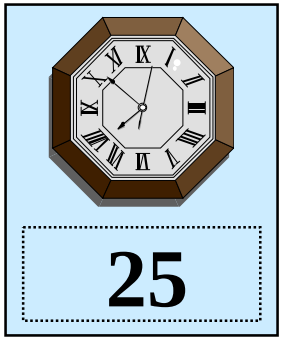


CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30



D

2

```
wait on Q;
D <= Q + 1 after 15 ns;
```

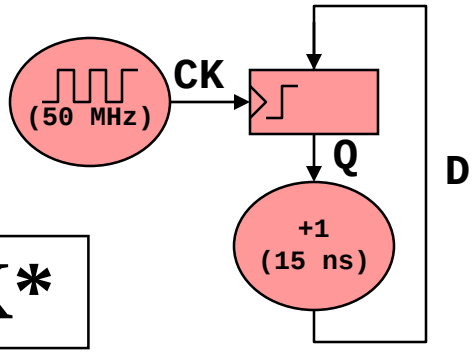
Q*

Q

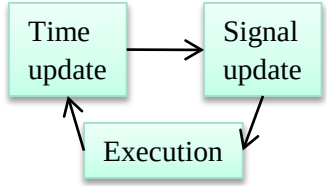
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

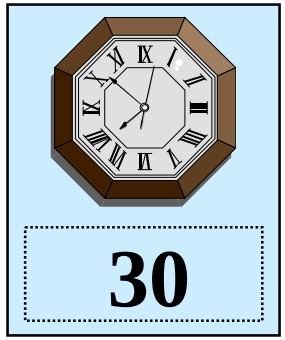


Event-driven simulation step by step




```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=30

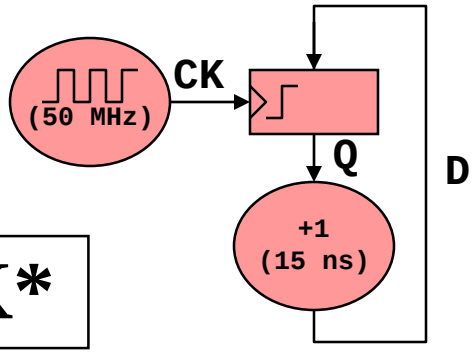



```
wait on Q;
D <= Q + 1 after 15 ns;
```

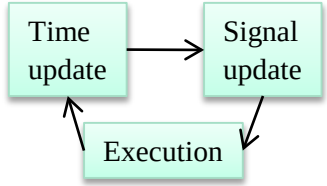
Q*


```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



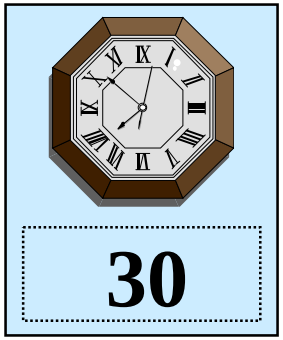
Event-driven simulation step by step



CK

‘0’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

2

```
wait on Q;
D <= Q + 1 after 15 ns;
```

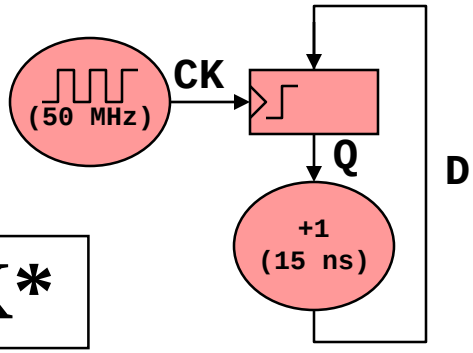
Q*

Q

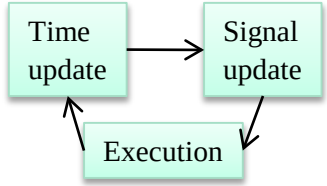
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



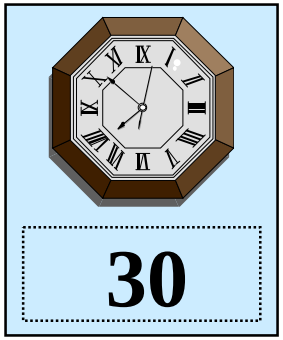
Event-driven simulation step by step



CK

‘0’ | ‘1’ @ 30 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```



D

2

```
wait on Q;
D <= Q + 1 after 15 ns;
```

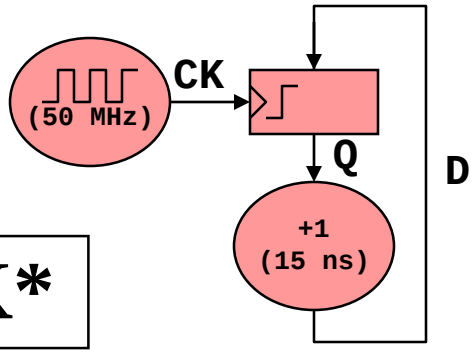
Q*

Q

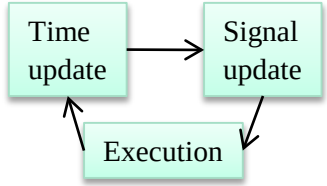
1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



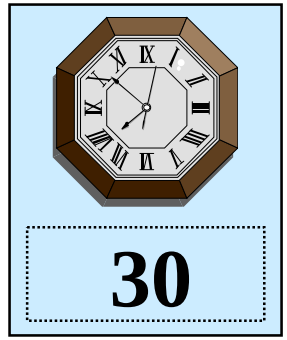
Event-driven simulation step by step



CK	
‘0’	‘1’ @ 30 + 1

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D	
2	

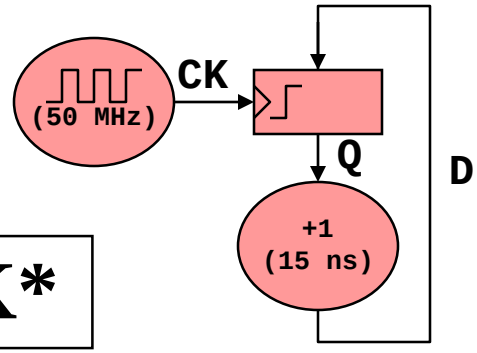
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

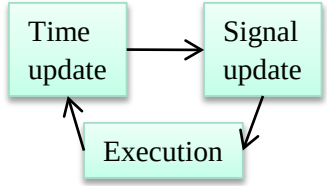
Q	
1	

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

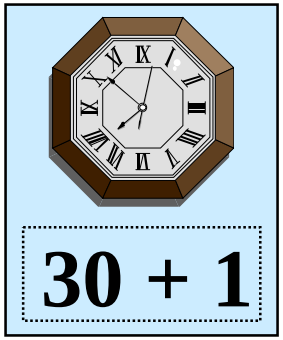


Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=40

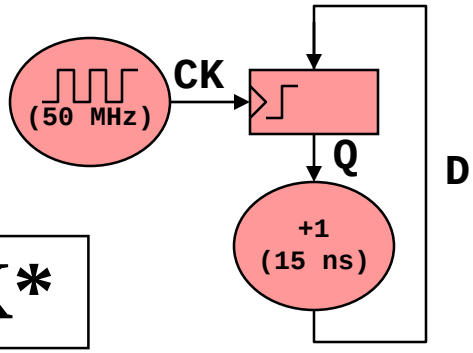



```
wait on Q;
D <= Q + 1 after 15 ns;
```

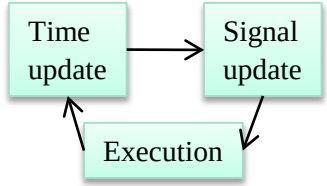
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

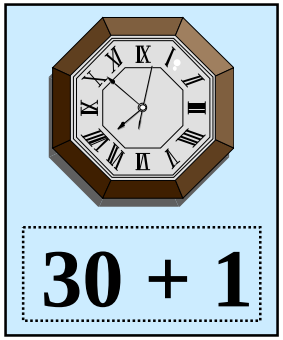


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D

2

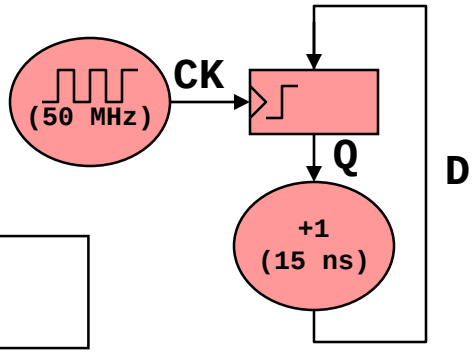
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

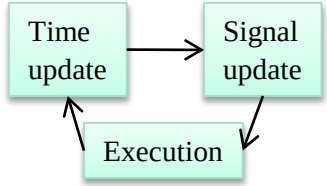
Q

1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



Event-driven simulation step by step

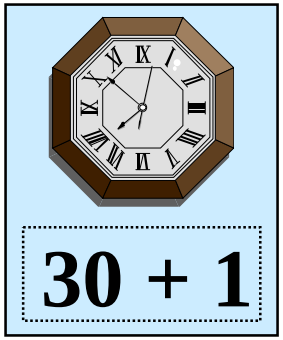


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D

2

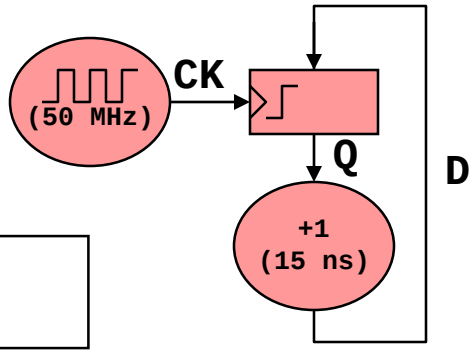
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

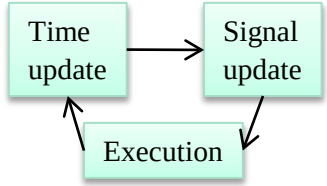
Q

1

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



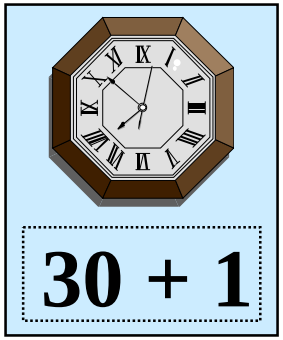
Event-driven simulation step by step



CK
‘1’	

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



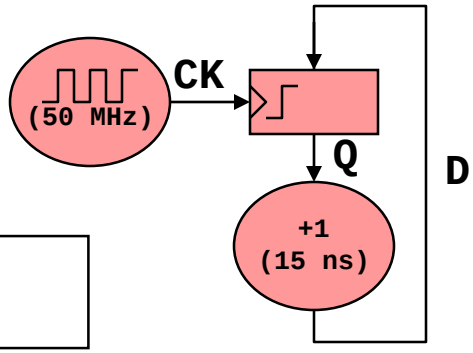
D
2	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

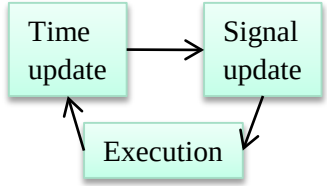
Q*

Q
1	2 @ 30 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```



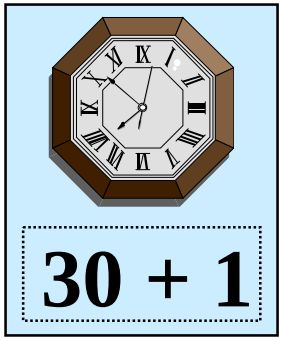
Event-driven simulation step by step



CK
‘1’	

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D
2	

```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

Q
1	2 @ 30 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
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```
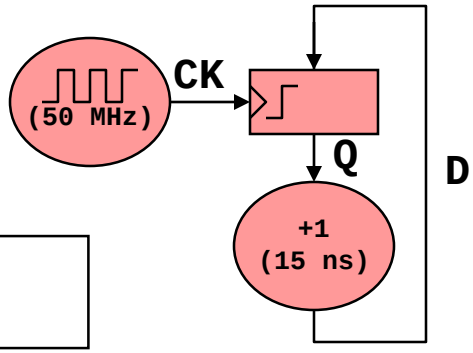
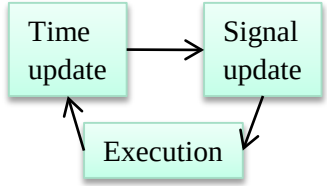



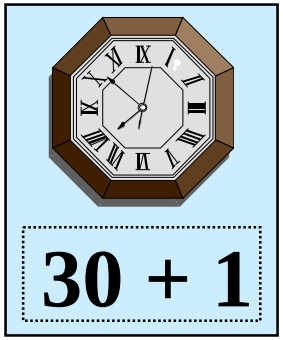
Event-driven simulation step by step



CK
‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D
2

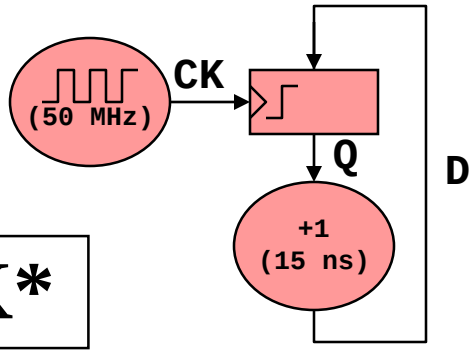
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

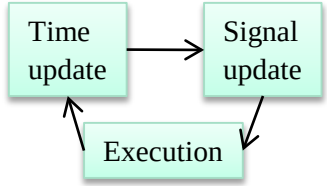
Q	
1	2 @ 30 + 2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*

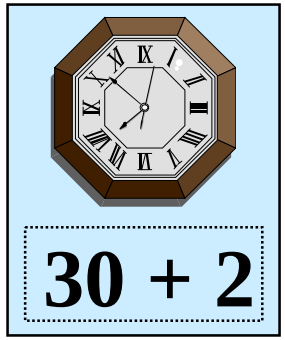


Event-driven simulation step by step




```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=40

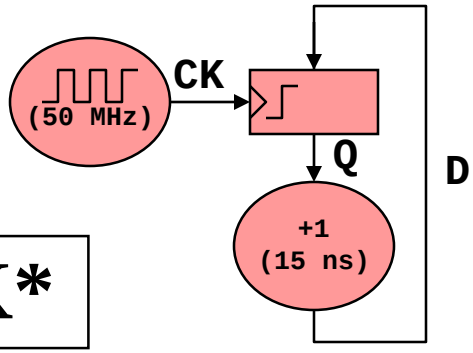



```
wait on Q;
D <= Q + 1 after 15 ns;
```

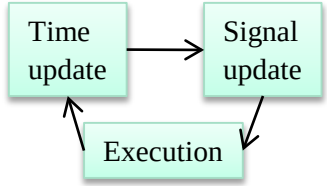
Q*


```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

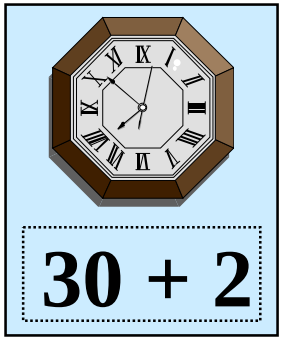


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D

2

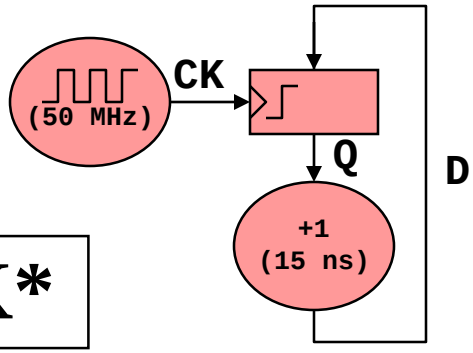
```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q

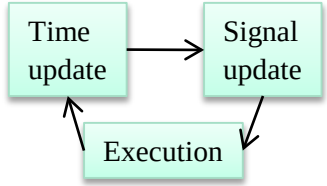
2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*



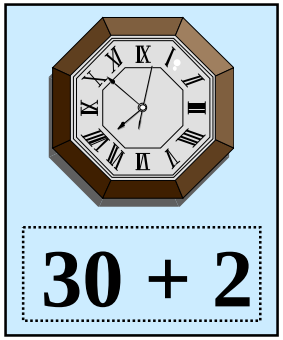
Event-driven simulation step by step



CK
'1'

```
CK <= '0';
wait for 10 ns;
CK <= '1';
wait for 10 ns;
```

T=40



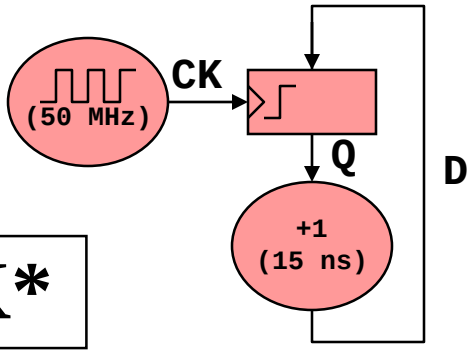
D	
2	3 @ 45

```
wait on Q;
D <= Q + 1 after 15 ns;
```

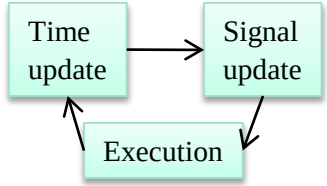
Q
2

```
wait on CK;
if CK = '1' then
  Q <= D;
end if;
```

CK*



Event-driven simulation step by step

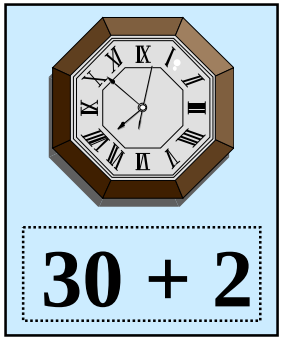


CK

‘1’

```
CK <= ‘0’;
wait for 10 ns;
CK <= ‘1’;
wait for 10 ns;
```

T=40



D

2 | 3 @ 45

```
wait on Q;
D <= Q + 1 after 15 ns;
```

Q*

Q

2

```
wait on CK;
if CK = ‘1’ then
  Q <= D;
end if;
```

CK*