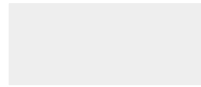


LOGIC



\$1.85

**INTRODUCTION TO
SYMBOLIC LOGIC
AND
ITS APPLICATIONS**

**BY
RUDOLF
CARNAP**



J. Edgar & Sons

$$p \rightarrow q$$

$$\neg \rightarrow \leftrightarrow \wedge$$

V

$$\Rightarrow \Leftrightarrow$$

AE

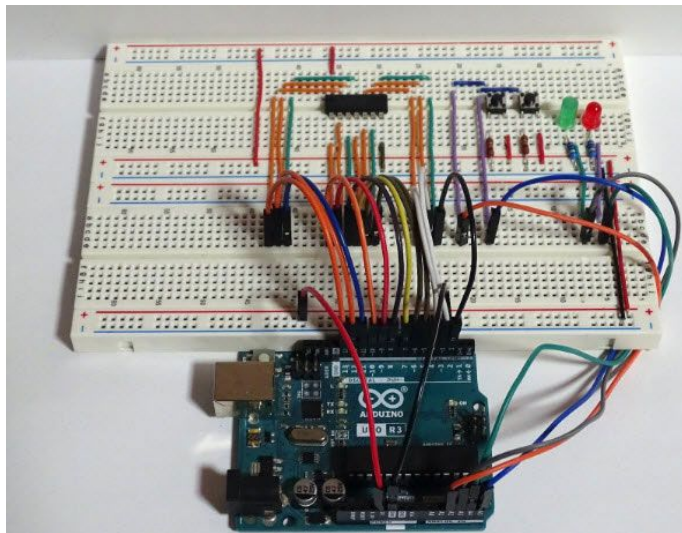
$$(\forall x)(P(x) \rightarrow Q(x))$$

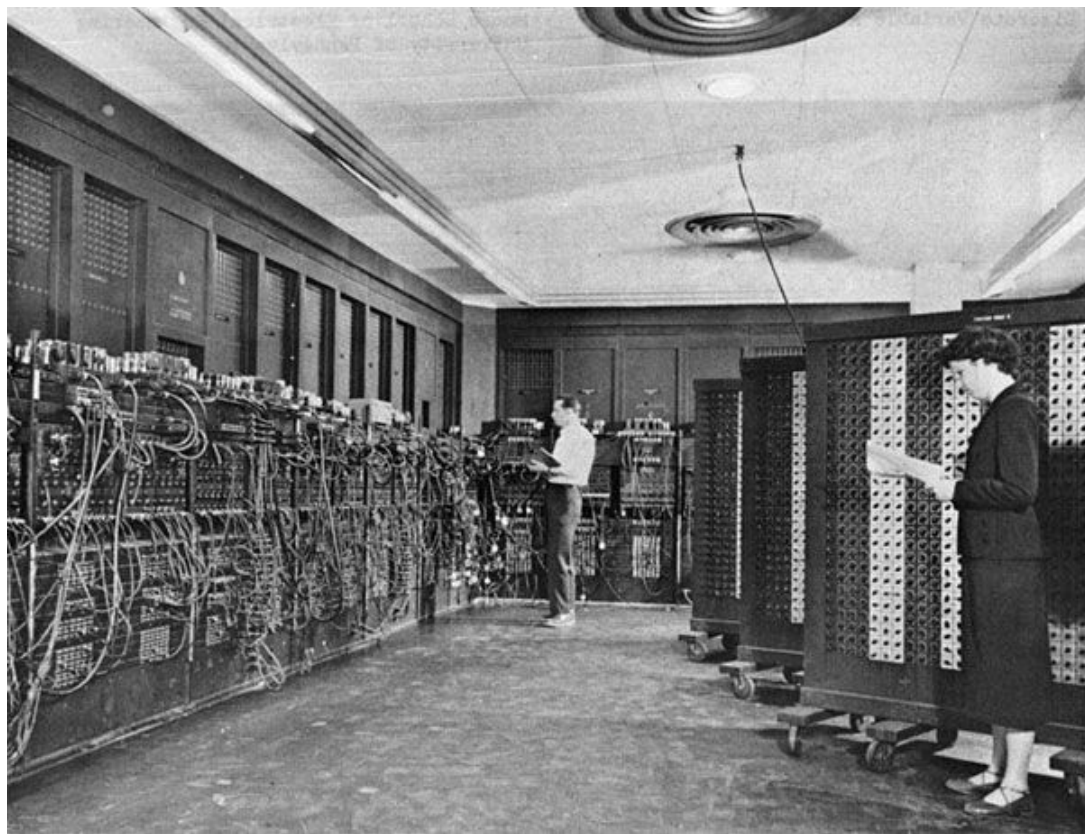
$$(\exists x) \neg (P(x) \rightarrow Q(x))$$

$$(\exists x)(P(x) \wedge \neg Q(x))$$

P	Q	R	$P \rightarrow Q$	$Q \rightarrow R$	$(P \rightarrow Q) \wedge (Q \rightarrow R)$
T	T	T	T	T	T
T	T	F	T	F	F
T	F	T	F	T	F
T	F	F	F	T	F
F	T	T	T	T	T
F	T	F	T	F	F
F	F	T	T	T	T
F	F	F	T	T	T

□





AND Truth Table

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

OR Truth Table

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

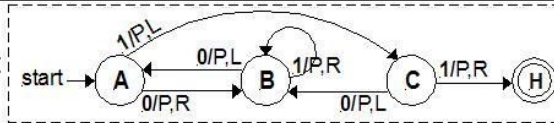
XOR Truth Table

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

NOT Truth Table

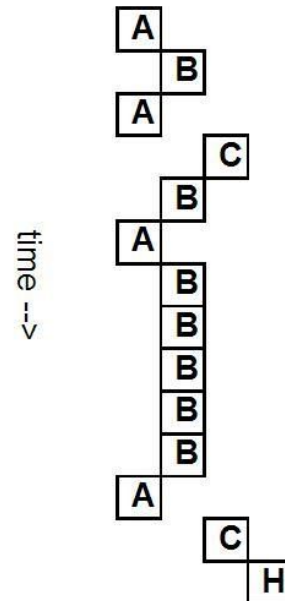
A	B
0	1
1	0

```
if(x){print(x)}
```



Total system state –
complete configuration (aka
"instantaneous description")
TAPE & TABLE & HEAD

Sequence	Instruction	Head
1	A	0000000 <u>0</u> 0000000
2	B	0000000 <u>0</u> 0000000
3	A	0000000 <u>1</u> <u>1</u> 0000000
4	C	000000 <u>1</u> <u>1</u> <u>0</u> 000000
5	B	0000 <u>1</u> <u>1</u> <u>1</u> <u>0</u> 000000
6	A	000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>0</u> 000000
7	B	0000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
8	B	00000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
9	B	000000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
10	B	0000000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
11	B	00000000 <u>0</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
12	A	0000000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
13	C	000000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000
14	H	0000000 <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> 000000



	A	0							
	B	0	1						
	1 A	1							
	1 1 C	0							
	1 1 1 B	0							
1 1 1 1 A	0								
1 1 1 1 B	1	1							
	1 1 B	1	1	1					
	1 B	1	1	1	1				
		B	1	1	1	1	1		
		B	0	1	1	1	1	1	1
	1 A	1	1	1	1	1	1		
1 1 C	1	1	1	1					
	1 H	1	1	1	1	1	1		

Progress of the computation (state-trajectory) of a 3-state busy beaver

```
boolean y = true;
```

```
if(y){
```

```
print(y);
```

```
}
```

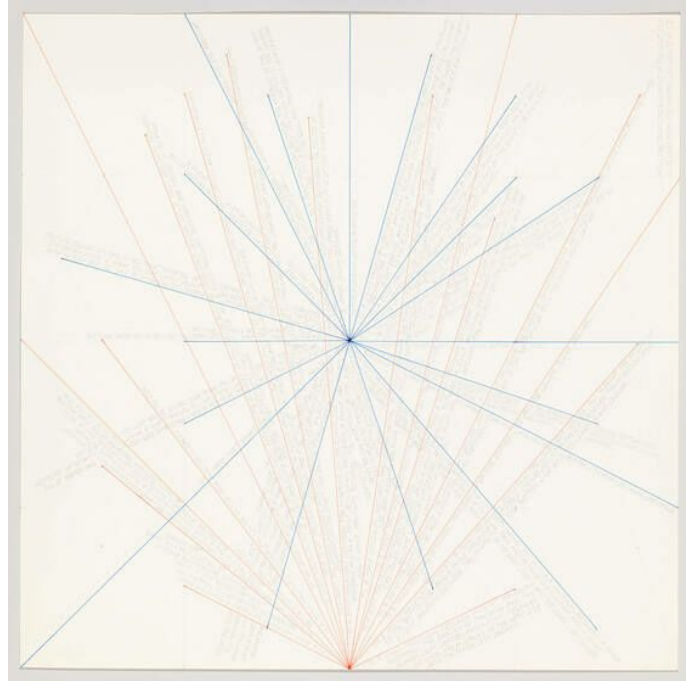
Console: true

```
int a = 1;
int b = 2;
int c = 3;

boolean y = true;

if(a < b && a < c){
float d = c * b;
    if(d * 0.5 == c){
        print(d, y);
    }
} else if (a > c){
    print(!y);
}
```

Console: 6.0 true

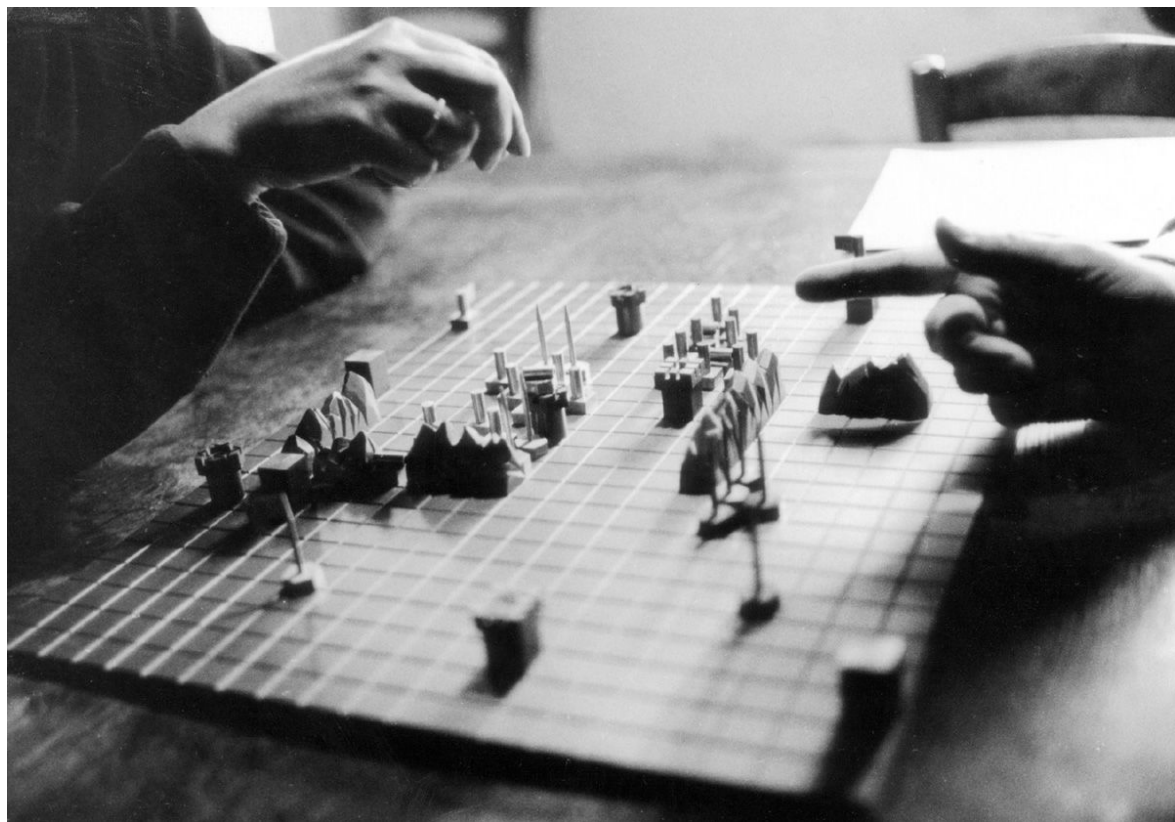




Robert Rauschenberg
Black and White (1965)
Oil on paper, 100 x 100 cm
Edition 1/100

Robert Rauschenberg's 'Black and White' (1965) is a seminal work in his career, showcasing his mastery of color and texture. The piece is a square format, featuring a dark, textured center surrounded by a light gray border. The texture is achieved through a combination of oil and paper, creating a rich, tactile surface. The work is part of a limited edition of 100, with this being the first print. The piece is displayed in a gallery setting, with a white frame and a light gray background.





Homework: create a simple interactive program using arithmetic, nested if statements, and multiple data types.