

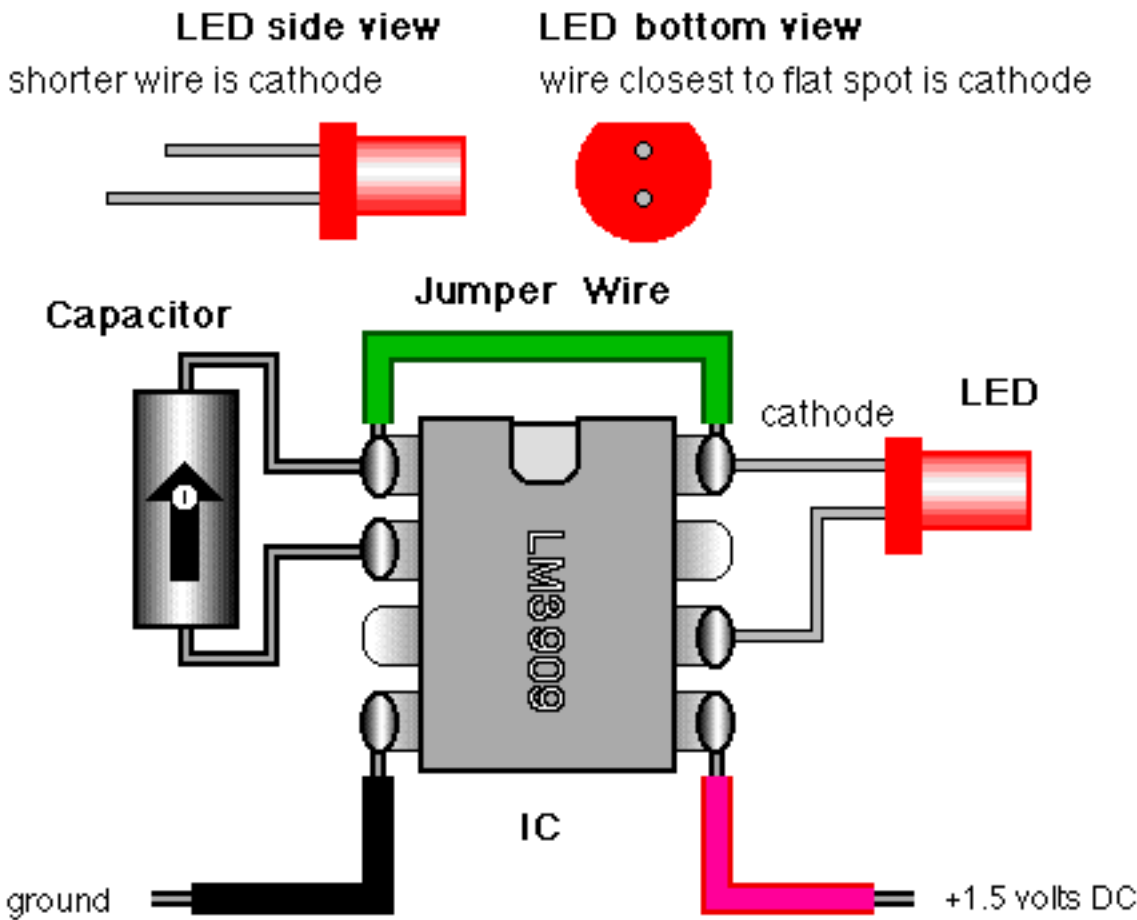
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<b>Trains</b>	<b>Newton</b>	<b>Consulting</b>	<b>Other</b>				
<b>Layout</b>	<b>HO</b>	<b>HOn30</b>	<b>Tips</b>	<b>Circuits</b>	<b>Kits</b>	<b>Geared Locos</b>	
6 diode directional light	2 diode + 2 rectifier directional	1 rectifier non-directional	non-directional for efficient "can" motors	dual alternating flashers	dual tandem flashers	simulate a Gyalite flasher	simple flashing light
simpler flashing light	simplest flashing light	infrared train detector	photocell train detector	modify flashing toy pin	1.5 volt DC power supply	hefty 1.5 VDC supply	constant 5 volts DC supply
modify Athearn locos	different electronic switches						

**A simple flashing light circuit.**

This project uses a 3909 IC and a few other parts; power is 1.5 volts DC.

**This circuit is a flasher powered by 1.5 volts DC.**



	<b>Radio Shack</b>	<b>Digi-Key</b>	<b>All Elect.</b>	<b>Mouser</b>
<b>LM3909</b>	276-1705	9188B-ND	LM3909	
<b>cap 470µ F</b>	272-1018	P6603-ND	470 16V	140-XRL10V470
<b>LED red</b>	276-044	P363-ND	MLED-1	592-SLR37VR3

<b>LED green</b>	276-021	P364-ND	MLED-2	592-SLR37MG3
<b>LED yellow</b>	276-022	P365-ND	MLED-3	592-SLR37YY3
<b>LED orange</b>		P366-ND		592-SLR37DU3

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<b>Layout</b>	<b>HO</b>	<b>HOn30</b>	<b>Tips</b>	<b>Circuits</b>	<b>Kits</b>	<b>Geared Locomotives</b>	
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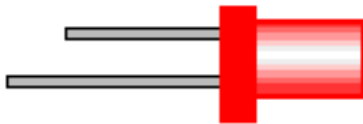
An even simpler flashing light circuit.

This project uses parts from [Digi-Key](http://www.digikey.com).

This is a small flashing LED circuit powered by 1.2 to 2.4 volts DC.

**LED side view**

shorter wire is cathode



**LED bottom view**

wire closest to flat spot is cathode

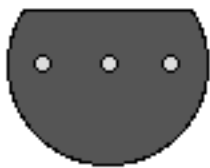


**IC front view**



DC in ground

**IC bottom view**



**IC**

**Resistor**  
(value varies, see below)

1.2 to 4.5 volts DC

ground

cathode

**LED**

part	Digi-Key
Resistor	270EBK-ND*
Integrated Circuit	HT-2014L-ND**
LED	P424-ND***

\* this is a 270 ohm resistor, value varies with type of LED (see below)

\*\* this flashes 1/second, part no. HT-2014M-ND flashes 2/second

\*\*\* LED focus with 270 ohm resistor, can also use green and amber

\*\*\* LED for use with 270 ohm resistor, can also use green and amber

Formula for calculating values is as follows:

$$\text{Resistor} = \frac{(\text{supply voltage}) - (\text{LED voltage})}{\text{LED current (in Amps)}}$$

for a 4.5 volt power supply, with a 2 volt, 10 milliAmp LED:

$$\text{Resistor} = \frac{4.5 \text{ volts} - 2 \text{ volts}}{0.01 \text{ amps}} = 250 \text{ ohms (270 ohms is closest value)}$$

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simpler flashing light	<b>simplest flashing light</b>	infrared train detector	photocell train detector	modify flashing toy pin	1.5 volt DC power supply	hefty 1.5 VDC supply	constant 5 volts DC supply
modify Athearn locos	different electronic switches						

**The simplest flashing light circuit in the world!**

This is the simplest flashing circuit, suitable for tops of tall buildings, smokestacks and water towers.

**This is the simplest circuit, using LEDs with built-in flashers, powered by 2 AA batteries.**

**LED bottom view**

wire closest to flat spot is cathode



LED

connect LED to two AA batteries wired in series

1.5 volts



	<b>Radio Shack</b>	<b>Digi-Key</b>	<b>All Elect.</b>	<b>Mouser</b>
LED red	276-036	LT1042-ND	LED-4	351-8001
LED green	276-030	LT1043-ND	LED-4G	351-8002
LED yellow		LT1044-ND	LED-4Y	351-8003

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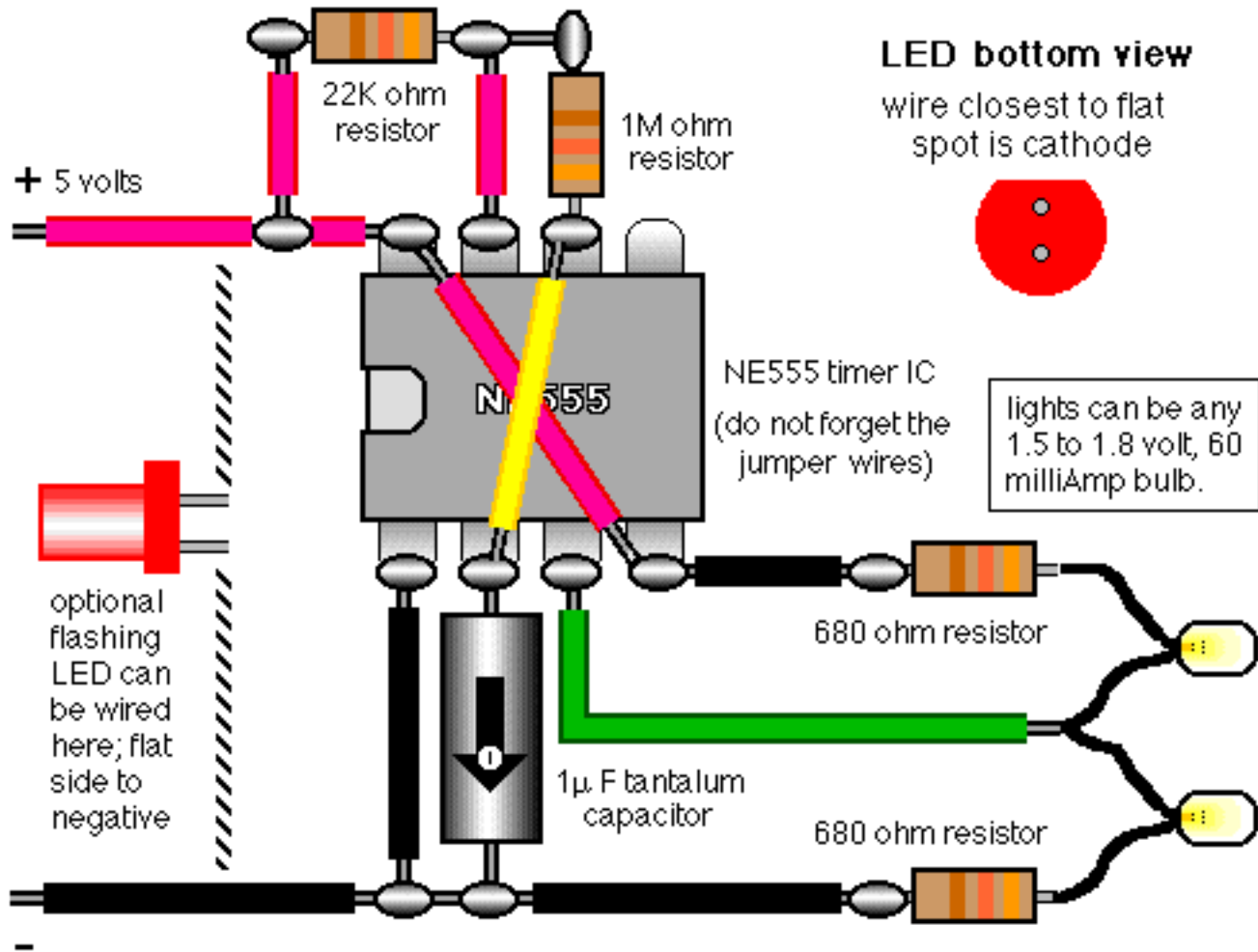
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### To simulate the Gyalite (dual flashing headlights).

This circuit must be connected to a 5 volt DC source. See my RR page for several 5 volt supplies. Note the flashing LED is optional, but looks s-o-o-o-o good on the top of a locomotive.

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This circuit powers two small lights, alternating between the two to simulate a gyrating headlight (Gyalite™); an optional roof flasher can be wired in also. Must be connected to a 5 volt DC source.



	Radio Shack	Digi-Key	All Elect.	Mouser
NE555 IC	276-1723	LM555CN-ND	LM555	511-NE555N
resistor 22K ohm	271-1325	22KEBK-ND	22K ohm	30BJ50022K
resistor 1M ohm	271-1356	1MEBK-ND	1M ohm	30BJ5001M
resistor 68 ohm	271-1106	68EBK-ND	68 ohm	588-YL568
cap. tantalum 1µF	272-1434	P2105-ND	DT25	539-TAC20V105K
LED red blink	276-036	LT1042-ND	LED-4	351-8001
LED green blink	276-030	LT1043-ND	LED-4G	351-8002
LED yellow blink		LT1044-ND	LED-4Y	351-8003

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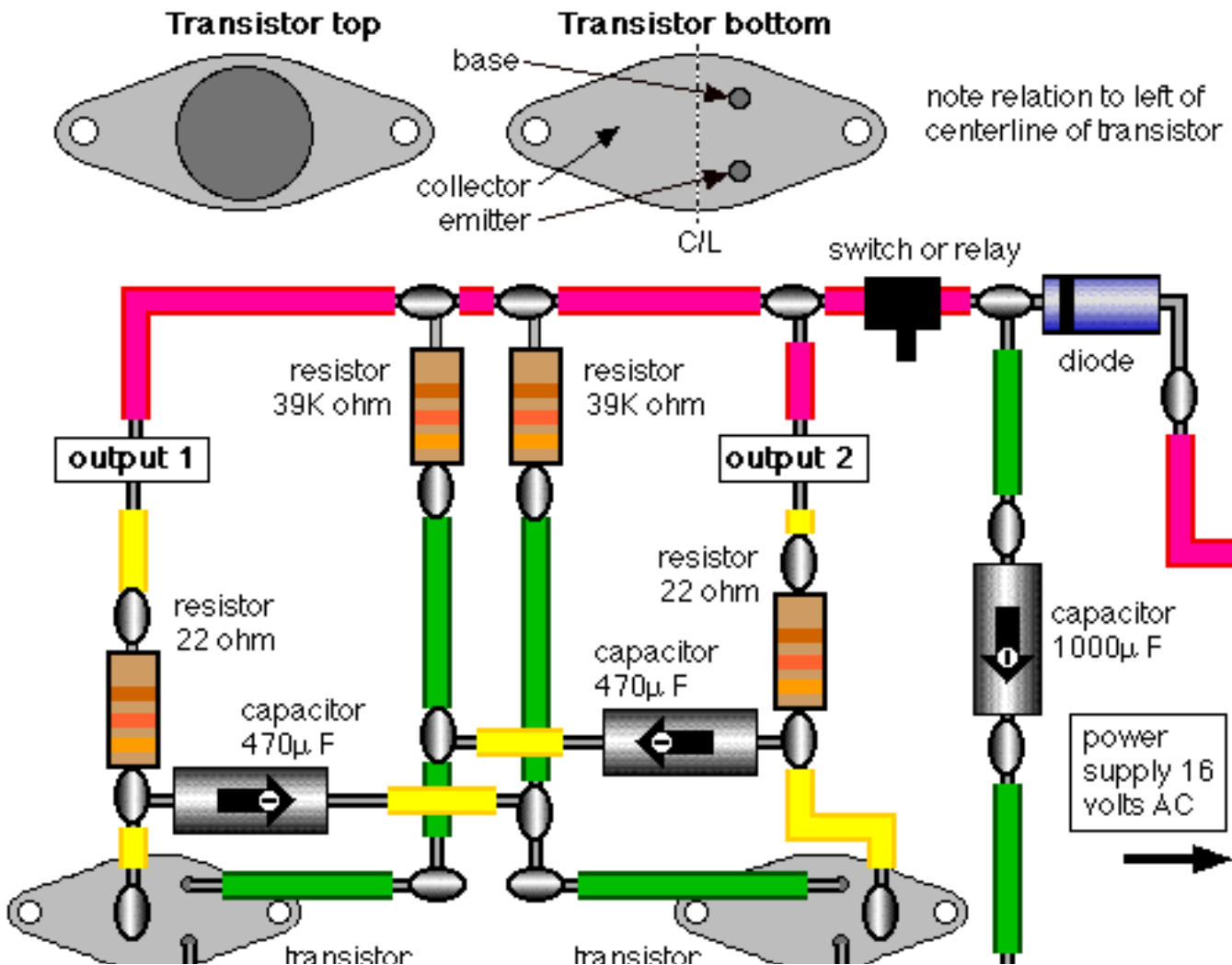
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**A dual alternating flashing light circuit.**

This project is best for mounting on a layout to light a crossing or ring a bell.

This is a very easy to build dual output flasher, powered by a 16 volt AC source. It uses low-tolerance parts; but is not suitable for installation inside rolling stock or engines. You can use it to flash two lights—like on a grade crossing—or trigger a relay to ring a bell.





	<b>Radio Shack</b>	<b>Digi-Key</b>	<b>All Elect.</b>	<b>Mouser</b>
<b>capacitor 470 <math>\mu</math>F</b>	272-1030	P6612-ND	470 $\mu$ F 16V	140-22RL10V470
<b>capacitor 1000 <math>\mu</math>F</b>	272-1032	P6613-ND	1000 $\mu$ F 16V	140-22RL10V1000
<b>diode 2A 200 PIY</b>	276-1143	1N5402GICT-ND	1N4003	583-SF24
<b>NPN Tran. 2N3055</b>	276-2041		2N3055	
<b>resistor 39K ohms</b>	271-1123	39KEBK-ND	39K ohm	30BJ50039K
<b>resistor 22 ohms</b>	271-1103	22EBK-ND	22 ohm	30BJ50022

NOTE: to ring a bell, short Output 1 with a 200 ohm, 5 watt resistor; and connect Output 2 to the bell power leads.

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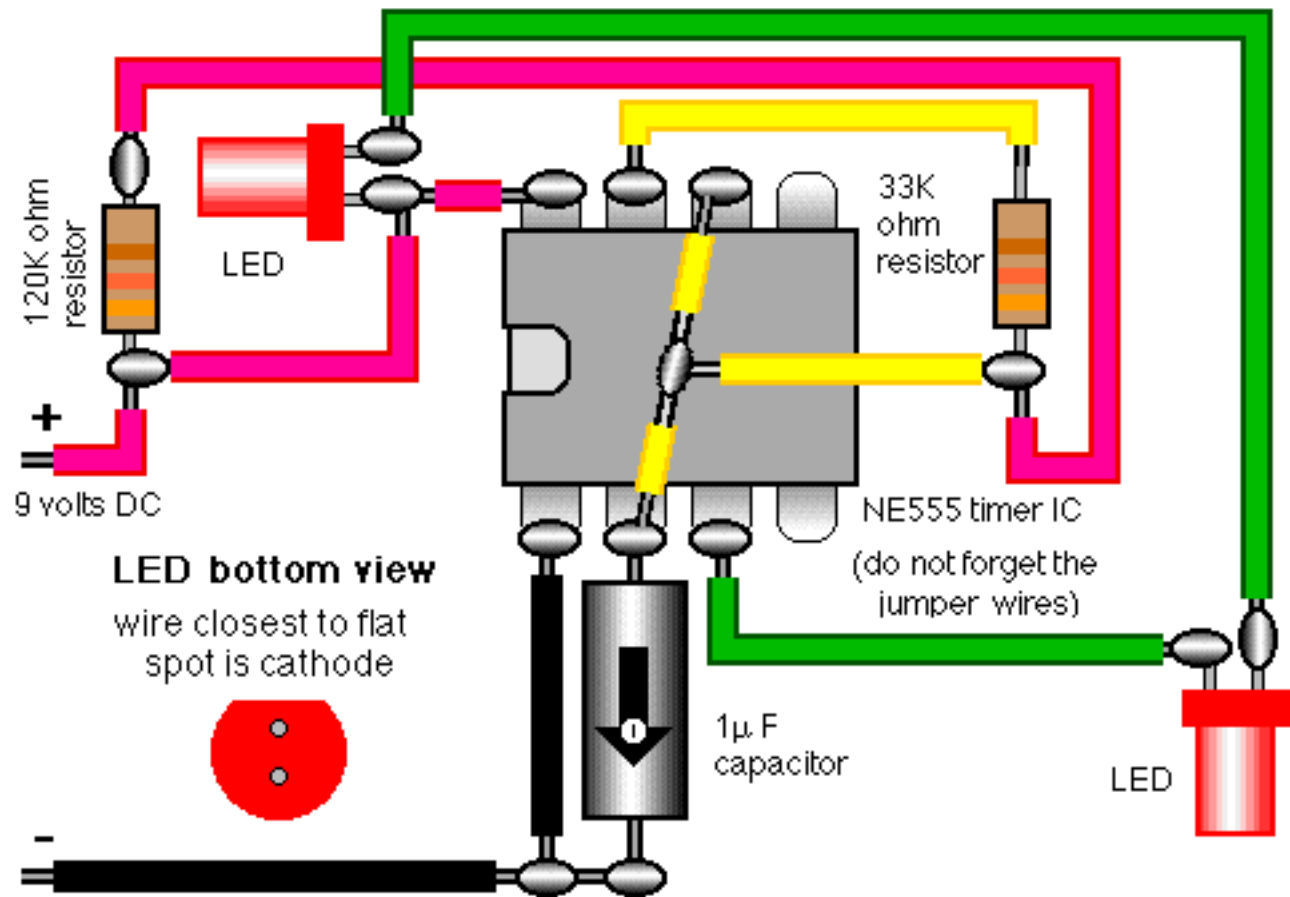
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### A dual tandem flashing light circuit powered by a 9 volt battery,

This circuit is powered by a 9 volt battery, suitable for warning lights on a tall structure. (Personally, I can't recommend you buy anything but the **Rollins Railroad Designs** kit; for \$4.00 you can't go wrong. The 555 IC is about \$1.50 by itself at **Radio Shack**). If you choose to buy all the parts yourself, realize you need ONLY two LEDs, not two of each; you should be able to mix and match colors.

**This circuit flashes two LEDs in tandem, powered by a 9-volt transistor radio battery.**



	<b>Radio Shack</b>	<b>Digi-Key</b>	<b>All Elect.</b>	<b>Mouser</b>
<b>NE555 timer IC</b>	276-1723	LM555CN-ND	LM555	511-NE555N
<b>resistor 33K ohms</b>	271-1129	33KEBK-ND	33 K ohm	30BJ250-33K
<b>resistor 120K ohms</b>	271-312 (set)	120KEBK-ND	120 K ohm	30BJ250-120K
<b>capacitor 1µ F</b>	272-1055	EF1105-ND	MFC-1	146-250V1.0K
<b>LEDs (need two) red</b>	276-044	P363-ND	MLED-1	592-SLR37YR3
<b>LEDs (need two) green</b>	276-021	P364-ND	MLED-2	592-SLR37MG3
<b>LEDs (need two) yellow</b>	276-022	P365-ND	MLED-3	592-SLR37YY3
<b>LEDs (need two) orange</b>		P366-ND		592-SLR37DU3

**whole kit is available from Rollins Railroad Designs**

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