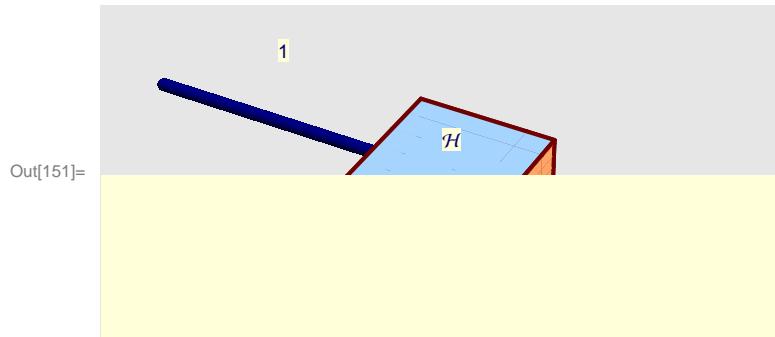
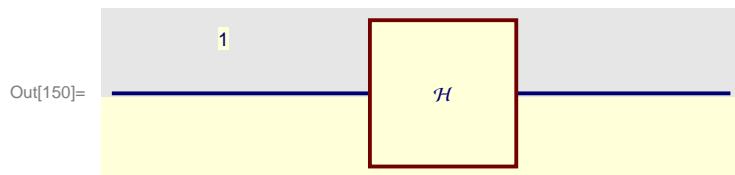


```
In[1]:= Needs["Quantum`Computing`"]
```

```
In[149]:= circuiteexpr :=  $\hat{\mathcal{H}}$ 
QuantumPlot[circuiteexpr]
QuantumPlot3D[circuiteexpr]
TraditionalForm[QuantumEvaluate[circuiteexpr]]
TraditionalForm[QuantumTableForm[circuiteexpr]]
QuantumMatrixForm[circuiteexpr]
```



Out[152]//TraditionalForm=

$$\frac{|0\rangle\langle 0|}{\sqrt{2}} + \frac{|1\rangle\langle 0|}{\sqrt{2}} + \frac{|0\rangle\langle 1|}{\sqrt{2}} - \frac{|1\rangle\langle 1|}{\sqrt{2}}$$

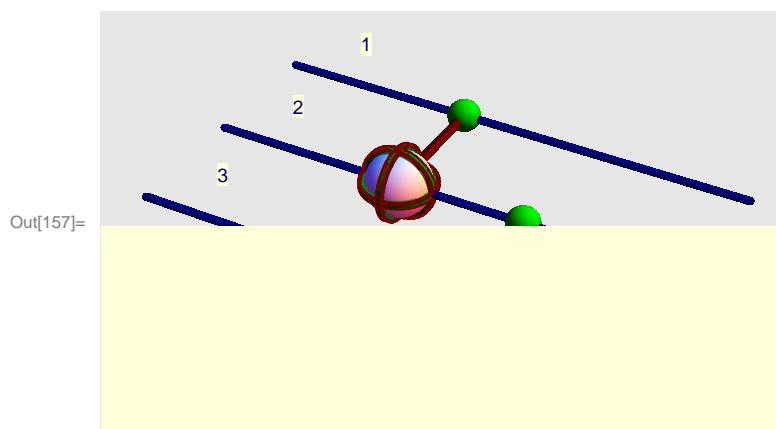
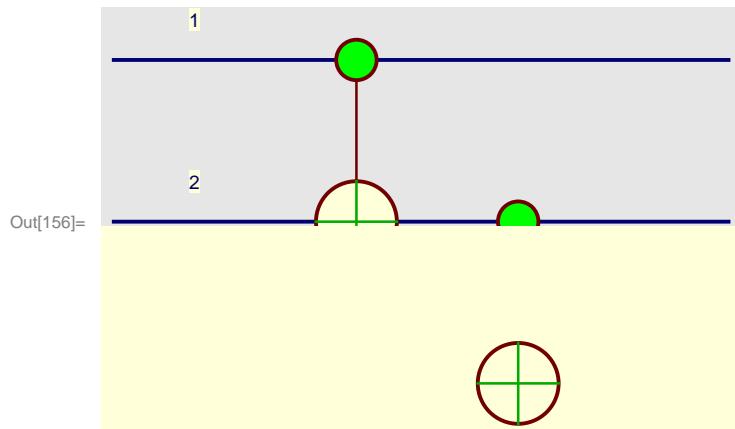
Out[153]//TraditionalForm=

	Input	Output
0	$ 0\rangle$	$\frac{ 0\rangle}{\sqrt{2}} + \frac{ 1\rangle}{\sqrt{2}}$
1	$ 1\rangle$	$\frac{ 0\rangle}{\sqrt{2}} - \frac{ 1\rangle}{\sqrt{2}}$

Out[154]//MatrixForm=

$$\begin{pmatrix} \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} \end{pmatrix}$$

```
In[155]:= circuiteexpr := C(2)[NOT3] . C(1)[NOT2]
QuantumPlot[circuiteexpr]
QuantumPlot3D[circuiteexpr]
TraditionalForm[QuantumTableForm[circuiteexpr]]
QuantumMatrixForm[circuiteexpr]
```



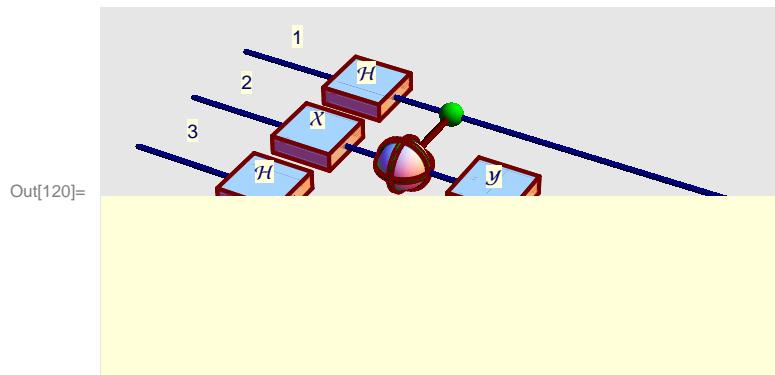
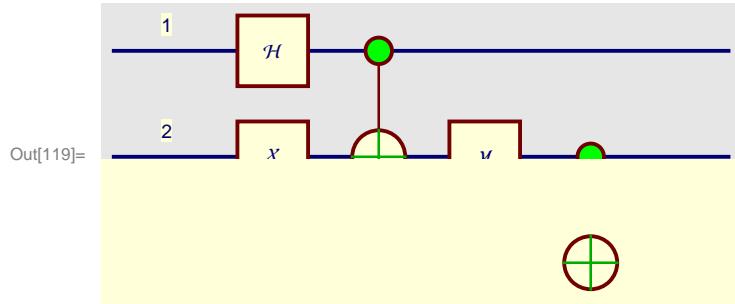
Out[158]//TraditionalForm=

	Input	Output
0	$ 000\rangle$	$ 000\rangle$
1	$ 001\rangle$	$ 001\rangle$
2	$ 010\rangle$	$ 011\rangle$
3	$ 011\rangle$	$ 010\rangle$
4	$ 100\rangle$	$ 111\rangle$
5	$ 101\rangle$	$ 110\rangle$
6	$ 110\rangle$	$ 100\rangle$
7	$ 111\rangle$	$ 101\rangle$

```
Out[159]//MatrixForm= 
$$\begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \end{pmatrix}$$

```

```
In[118]:= circuiteexpr := C{2}[NOT3] . Y2 . C{1}[NOT2] . H3 . X2 . H1
QuantumPlot[circuiteexpr]
QuantumPlot3D[circuiteexpr]
TraditionalForm[QuantumTableForm[circuiteexpr]]
```



Out[121]/TraditionalForm=

	Input	Output
0	$ 000\rangle$	$-\frac{1}{2}i 000\rangle - \frac{1}{2}i 001\rangle + \frac{1}{2}i 110\rangle + \frac{1}{2}i 111\rangle$
1	$ 001\rangle$	$-\frac{1}{2}i 000\rangle + \frac{1}{2}i 001\rangle - \frac{1}{2}i 110\rangle + \frac{1}{2}i 111\rangle$
2	$ 010\rangle$	$\frac{1}{2}i 010\rangle + \frac{1}{2}i 011\rangle - \frac{1}{2}i 100\rangle - \frac{1}{2}i 101\rangle$
3	$ 011\rangle$	$-\frac{1}{2}i 010\rangle + \frac{1}{2}i 011\rangle - \frac{1}{2}i 100\rangle + \frac{1}{2}i 101\rangle$
4	$ 100\rangle$	$-\frac{1}{2}i 000\rangle - \frac{1}{2}i 001\rangle - \frac{1}{2}i 110\rangle - \frac{1}{2}i 111\rangle$
5	$ 101\rangle$	$-\frac{1}{2}i 000\rangle + \frac{1}{2}i 001\rangle + \frac{1}{2}i 110\rangle - \frac{1}{2}i 111\rangle$
6	$ 110\rangle$	$\frac{1}{2}i 010\rangle + \frac{1}{2}i 011\rangle + \frac{1}{2}i 100\rangle + \frac{1}{2}i 101\rangle$
7	$ 111\rangle$	$-\frac{1}{2}i 010\rangle + \frac{1}{2}i 011\rangle + \frac{1}{2}i 100\rangle - \frac{1}{2}i 101\rangle$