In [16]:

```
import numpy as np
import matplotlib.pyplot as plt
```

In [17]:

```
#finding the fidelity of the system
#The intial coefficient for |psi> are a,b,c,d=0.5 , after tau time the coefficient changes
#with the  state |psi>= a|00>+b|01>+c|10>+d|11>)
#expected result |phi>= 0.5(|00>+|01>+|10>+e^(i pi)|11>)
#The state |11> changes to d=a*e^i(phi_ent) while the rest of the state remain the same
#Assume state |00>,|01> and |10> probability is unchanged since not involved in dynamic
#The fidentility is given by F=|<phi|psi>|^2
#gives a measure of how accurate the system is
# phi_ent=-3.26
#The state |11> is in
state= 0.5* np.exp(-3.26*1j)
overlap= (0.5*0.5)+(0.5*0.5)+(0.5*0.5)+ (-0.5)*state
fidelity=np.abs(overlap)
print('The fidelity of the system is',fidelity)
```

```
The fidelity of the system is 0.9986862689362385
```

In [ ]: