Experiment 1 :

Aim : To generate and visualize Elementry Signals in Continuous time

Software used : Python

IDE : Google Colab

Experiment 1.1 : To generate and visualize a continuous time sinusoidal Signal

$x(t) = 5sin\Pi t$ in 0≤t≤2

```
import numpy as np
import matplotlib.pyplot as plt
#import math
t=np.linspace(0,2,50)
#for i in range (1,50) :
 # n=n(i)
x=5*np.sin(np.pi*t);
plt.plot(t,x)
#plt.stem(n,x)
plt.xlabel('$t$')
plt.ylabel('$x(t)$')
plt.ylim((-5,5))
plt.grid()
plt.show()
```

Experiment 1.2 To generate and visualize Unit Impulse Signal

```
import numpy as np
import matplotlib.pyplot as plt
UL = 10
LL = -10
t = np.arange(LL, UL, 1)
print('t=',t)
myd=[]
myd= np. concatenate((np.zeros(10), np.ones(1),np.zeros(9) ), axis=0)
print('d=',myd)
```

```
plt.stem(t, myd)
plt.xlabel('$t->$')
plt.xticks(np.arange(LL, UL, 1))
plt.yticks([0, 1])
plt.ylabel('$\delta[t]->$')
plt.title('Unit Impulse $\delta[t]$')
plt.grid();
```

▾ Experiment 1.3 To generate and visualize Unit step Signal

```
import numpy as np
import matplotlib.pyplot as plt
UL = 10
LL = -10
t = np.arange(LL, UL, 1)
print('t=',t)
myunit=[]
myunit= np. concatenate((np.zeros(10), np.ones(10) ), axis=0)
print('u=',myunit)
plt.plot(t, myunit)
plt.xlabel('$t->$')
#plt.xticks(np.arange(LL, UL, 1))
#plt.yticks([0, 1])
plt.ylabel('$\delta[t]->$')
plt.title('Unit Impulse $\delta[t]$')
plt.grid();
```

▾ Experiment 1.4 : To generate and visualize unit ramp signal

$r(t) = t$ for t>=0
$r(t) = 0$ for t<0

```
# Function to generate unit ramp signal r(t)
# r(t)= t for t>= 0, r(t)= 0 otherwise
def unit_ramp(n):
    ramp =[]
    for sample in n:
        if sample<0:
            ramp.append(0)
        else:
            ramp.append(sample)
    return ramp

UL = 10
LL = -10
t = np.arange(LL, UL, 1)
r = unit_ramp(t)
plt plot(t  n)
```

```
plt.plot(t, r)
plt.xlabel('$t$')
plt.xticks(np.arange(LL, UL, 1))
plt.yticks([0, UL, 1])
plt.ylabel('r[t]')
plt.title('Unit Ramp r[t]')
#plt.savefig("UnitRamp.png")
plt.grid()
```

Practice Programs

1. To generate and visualize other elecmentry continuous time signals

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