```python
In [263...  import math
            from lx16a import *
            import time
            from math import sin, cos
            import matplotlib.pyplot as plt
```

```python
In [264...  # initialize variables
            start_time = time.time()
            duration = 5.0
            initial_angles = [145.68, 115.92, 141.84, 155.52, 114.52, 172.08, 130.56, 122.16]   # Initial angles
            amplitudes = [20, 15, 20, 15, 20, 15, 20, 15]                                        # Amplitude of oscilla
            phase_offsets = [0, math.pi, 0, math.pi, 0, math.pi, 0, math.pi]                     # Phase offset in rad.
            angular_frequency = 2 * math.pi / 1                                                  # Complete a cycle eve
```

```python
In [265...  # calculate servo angles
            while time.time() - start_time < duration:        # while the current time stamp - start time is less than 5
                current_time = time.time() - start_time       # current time = time stamp - start time
                # Move front and back legs
                servo1 = 145.68 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 1 is at {servo1} degrees.")
                servo2 = 115.92 + (15 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 2 is at {servo2} degrees.")
                servo5 = 114.52 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 5 is at {servo5} degrees.")
                servo6 = 172.08 - (15 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 6 is at {servo6} degrees.")
                time.sleep(0.1)
                # Move left and right legs
                servo3 = 141.84 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 3 is at {servo3} degrees.")
                servo4 = 155.52 + (15 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 4 is at {servo4} degrees.")
                servo7 = 130.56 - (20 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 7 is at {servo7} degrees.")
                servo8 = 122.16 - (15 * math.sin((2 * math.pi / 1) * current_time + 0))
                print(f"Servo 8 is at {servo8} degrees.")
                time.sleep(0.1)
```

```
Servo 1 is at 146.70043294583547 degrees.
Servo 2 is at 116.68532470937662 degrees.
Servo 5 is at 115.54043294583548 degrees.
Servo 6 is at 171.3146752906234 degrees.
Servo 3 is at 142.86043294583547 degrees.
Servo 4 is at 156.28532470937662 degrees.
Servo 7 is at 129.53956705416454 degrees.
Servo 8 is at 121.39467529062338 degrees.
Servo 1 is at 165.16732026685332 degrees.
Servo 2 is at 130.53549020013998 degrees.
Servo 5 is at 134.0073202668533 degrees.
Servo 6 is at 157.46450979986002 degrees.
Servo 3 is at 161.32732026685332 degrees.
Servo 4 is at 170.13549020014 degrees.
Servo 7 is at 111.07267973314669 degrees.
Servo 8 is at 107.54450979986001 degrees.
Servo 1 is at 155.69018663745226 degrees.
Servo 2 is at 123.42763997808919 degrees.
Servo 5 is at 124.53018663745223 degrees.
Servo 6 is at 164.57236002191084 degrees.
Servo 3 is at 151.85018663745225 degrees.
Servo 4 is at 163.02763997808918 degrees.
Servo 7 is at 120.54981336254777 degrees.
Servo 8 is at 114.65236002191082 degrees.
Servo 1 is at 131.66471221676528 degrees.
Servo 2 is at 105.40853416257396 degrees.
Servo 5 is at 100.50471221676528 degrees.
Servo 6 is at 182.59146583742606 degrees.
Servo 3 is at 127.82471221676528 degrees.
Servo 4 is at 145.00853416257397 degrees.
Servo 7 is at 144.57528778323473 degrees.
Servo 8 is at 132.67146583742604 degrees.
Servo 1 is at 128.39577754516682 degrees.
Servo 2 is at 102.95683315887513 degrees.
Servo 5 is at 97.23577754516683 degrees.
Servo 6 is at 185.0431668411249 degrees.
Servo 3 is at 124.55577754516682 degrees.
Servo 4 is at 142.55683315887512 degrees.
Servo 7 is at 147.8442224548332 degrees.
Servo 8 is at 135.12316684112488 degrees.
Servo 1 is at 150.50355750935603 degrees.
Servo 2 is at 119.537668132017 degrees.
```

```
Servo 5 is at 119.343557509356 degrees.
Servo 6 is at 168.462331867983 degrees.
Servo 3 is at 146.66355750935602 degrees.
Servo 4 is at 159.137668132017 degrees.
Servo 7 is at 125.736442490644 degrees.
Servo 8 is at 118.542331867983 degrees.
Servo 1 is at 165.67836835171713 degrees.
Servo 2 is at 130.91877626378783 degrees.
Servo 5 is at 134.51836835171713 degrees.
Servo 6 is at 157.08122373621217 degrees.
Servo 3 is at 161.83836835171712 degrees.
Servo 4 is at 170.51877626378786 degrees.
Servo 7 is at 110.56163164828287 degrees.
Servo 8 is at 107.16122373621215 degrees.
Servo 1 is at 151.21444403537996 degrees.
Servo 2 is at 120.07083302653497 degrees.
Servo 5 is at 120.05444403537996 degrees.
Servo 6 is at 167.92916697346504 degrees.
Servo 3 is at 147.37444403537995 degrees.
Servo 4 is at 159.67083302653498 degrees.
Servo 7 is at 125.02555596462004 degrees.
Servo 8 is at 118.00916697346503 degrees.
Servo 1 is at 128.62699947113606 degrees.
Servo 2 is at 103.13024960335204 degrees.
Servo 5 is at 97.46699947113605 degrees.
Servo 6 is at 184.869750396648 degrees.
Servo 3 is at 124.78699947113606 degrees.
Servo 4 is at 142.73024960335204 degrees.
Servo 7 is at 147.61300052886395 degrees.
Servo 8 is at 134.94975039664797 degrees.
Servo 1 is at 131.22517230853236 degrees.
Servo 2 is at 105.07887923139927 degrees.
Servo 5 is at 100.06517230853235 degrees.
Servo 6 is at 182.92112076860073 degrees.
Servo 3 is at 127.38517230853236 degrees.
Servo 4 is at 144.6788792313993 degrees.
Servo 7 is at 145.01482769146764 degrees.
Servo 8 is at 133.0011207686007 degrees.
Servo 1 is at 154.52210127476818 degrees.
Servo 2 is at 122.55157595607614 degrees.
Servo 5 is at 123.36210127476816 degrees.
Servo 6 is at 165.4484240439239 degrees.
```

```
Servo 3 is at 150.68210127476817 degrees.
Servo 4 is at 162.15157595607613 degrees.
Servo 7 is at 121.71789872523183 degrees.
Servo 8 is at 115.52842404392386 degrees.
Servo 1 is at 165.25206224861847 degrees.
Servo 2 is at 130.59904668646385 degrees.
Servo 5 is at 134.09206224861845 degrees.
Servo 6 is at 157.40095331353618 degrees.
Servo 3 is at 161.41206224861844 degrees.
Servo 4 is at 170.19904668646384 degrees.
Servo 7 is at 110.98793775138155 degrees.
Servo 8 is at 107.48095331353616 degrees.
Servo 1 is at 146.54442242806198 degrees.
Servo 2 is at 116.5683168210465 degrees.
Servo 5 is at 115.38442242806198 degrees.
Servo 6 is at 171.43168317895353 degrees.
Servo 3 is at 142.70442242806197 degrees.
Servo 4 is at 156.1683168210465 degrees.
Servo 7 is at 129.69557757193803 degrees.
Servo 8 is at 121.5116831789535 degrees.
Servo 1 is at 126.71441478903488 degrees.
Servo 2 is at 101.69581109177616 degrees.
Servo 5 is at 95.55441478903487 degrees.
Servo 6 is at 186.30418890822386 degrees.
Servo 3 is at 122.87441478903487 degrees.
Servo 4 is at 141.29581109177616 degrees.
Servo 7 is at 149.52558521096512 degrees.
Servo 8 is at 136.38418890822385 degrees.
Servo 1 is at 134.23527583311227 degrees.
Servo 2 is at 107.33645687483421 degrees.
Servo 5 is at 103.07527583311227 degrees.
Servo 6 is at 180.6635431251658 degrees.
Servo 3 is at 130.39527583311227 degrees.
Servo 4 is at 146.93645687483422 degrees.
Servo 7 is at 142.00472416688774 degrees.
Servo 8 is at 130.7435431251658 degrees.
Servo 1 is at 158.3957294636198 degrees.
Servo 2 is at 125.45679709771485 degrees.
Servo 5 is at 127.23572946361979 degrees.
Servo 6 is at 162.54320290228517 degrees.
Servo 3 is at 154.5557294636198 degrees.
Servo 4 is at 165.05679709771485 degrees.
```

```
Servo 7 is at 117.84427053638021 degrees.
Servo 8 is at 112.62320290228514 degrees.
Servo 1 is at 164.1706571041779 degrees.
Servo 2 is at 129.78799282813344 degrees.
Servo 5 is at 133.0106571041779 degrees.
Servo 6 is at 158.2120071718666 degrees.
Servo 3 is at 160.3306571041779 degrees.
Servo 4 is at 169.38799282813343 degrees.
Servo 7 is at 112.06934289582209 degrees.
Servo 8 is at 108.29200717186656 degrees.
Servo 1 is at 143.2470413980697 degrees.
Servo 2 is at 114.09528104855227 degrees.
Servo 5 is at 112.08704139806969 degrees.
Servo 6 is at 173.90471895144773 degrees.
Servo 3 is at 139.4070413980697 degrees.
Servo 4 is at 153.6952810485523 degrees.
Servo 7 is at 132.9929586019303 degrees.
Servo 8 is at 123.98471895144773 degrees.
Servo 1 is at 125.92392048721952 degrees.
Servo 2 is at 101.10294036541464 degrees.
Servo 5 is at 94.76392048721951 degrees.
Servo 6 is at 186.8970596345854 degrees.
Servo 3 is at 122.08392048721952 degrees.
Servo 4 is at 140.70294036541463 degrees.
Servo 7 is at 150.3160795127805 degrees.
Servo 8 is at 136.97705963458537 degrees.
Servo 1 is at 137.21607211611607 degrees.
Servo 2 is at 109.57205408708705 degrees.
Servo 5 is at 106.05607211611607 degrees.
Servo 6 is at 178.42794591291295 degrees.
Servo 3 is at 133.37607211611606 degrees.
Servo 4 is at 149.17205408708708 degrees.
Servo 7 is at 139.02392788388394 degrees.
Servo 8 is at 128.50794591291293 degrees.
Servo 1 is at 161.1510372941955 degrees.
Servo 2 is at 127.52327797064663 degrees.
Servo 5 is at 129.9910372941955 degrees.
Servo 6 is at 160.4767220293534 degrees.
Servo 3 is at 157.3110372941955 degrees.
Servo 4 is at 167.12327797064663 degrees.
Servo 7 is at 115.0889627058045 degrees.
Servo 8 is at 110.55672202935337 degrees.
```

```
Servo 1 is at 162.08386835691056 degrees.
Servo 2 is at 128.22290126768291 degrees.
Servo 5 is at 130.92386835691053 degrees.
Servo 6 is at 159.77709873231709 degrees.
Servo 3 is at 158.24386835691055 degrees.
Servo 4 is at 167.82290126768294 degrees.
Servo 7 is at 114.15613164308945 degrees.
Servo 8 is at 109.85709873231708 degrees.
Servo 1 is at 138.76816136725984 degrees.
Servo 2 is at 110.73612102544489 degrees.
Servo 5 is at 107.60816136725984 degrees.
Servo 6 is at 177.26387897455513 degrees.
Servo 3 is at 134.92816136725983 degrees.
Servo 4 is at 150.3361210254449 degrees.
Servo 7 is at 137.47183863274017 degrees.
Servo 8 is at 127.34387897455511 degrees.
Servo 1 is at 125.78660379537492 degrees.
Servo 2 is at 100.99995284653119 degrees.
Servo 5 is at 94.6266037953749 degrees.
Servo 6 is at 187.00004715346884 degrees.
Servo 3 is at 121.94660379537491 degrees.
Servo 4 is at 140.59995284653118 degrees.
Servo 7 is at 150.4533962046251 degrees.
Servo 8 is at 137.08004715346883 degrees.
Servo 1 is at 142.20896742746683 degrees.
Servo 2 is at 113.31672557060011 degrees.
Servo 5 is at 111.04896742746682 degrees.
Servo 6 is at 174.6832744293999 degrees.
Servo 3 is at 138.36896742746683 degrees.
Servo 4 is at 152.91672557060014 degrees.
Servo 7 is at 134.03103257253318 degrees.
Servo 8 is at 124.76327442939989 degrees.
```

In [266…
```python
# graph servo 1 angles
start_time = time.time()
duration = 5.0

times = []
servo1_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
```

```
        times.append(current_time)
        servo1 = 145.68 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
        servo1_angles.append(servo1)

        time.sleep(0.1)  # Ensure this is correct and consistent

# Plot
plt.figure(figsize=(10, 6))
plt.plot(times, servo1_angles, label='Servo 1', linestyle='-', marker='o', markersize=8, markerfacecolor='
plt.xlabel('Time (seconds)')
plt.ylabel('Angle (degrees)')
plt.title('Servo 1 Angle Over Time')
plt.legend()
plt.grid(True)
plt.show()
print(f"Servo 1's angles are: \n{servo1_angles}")
```

Servo 1 Angle Over Time
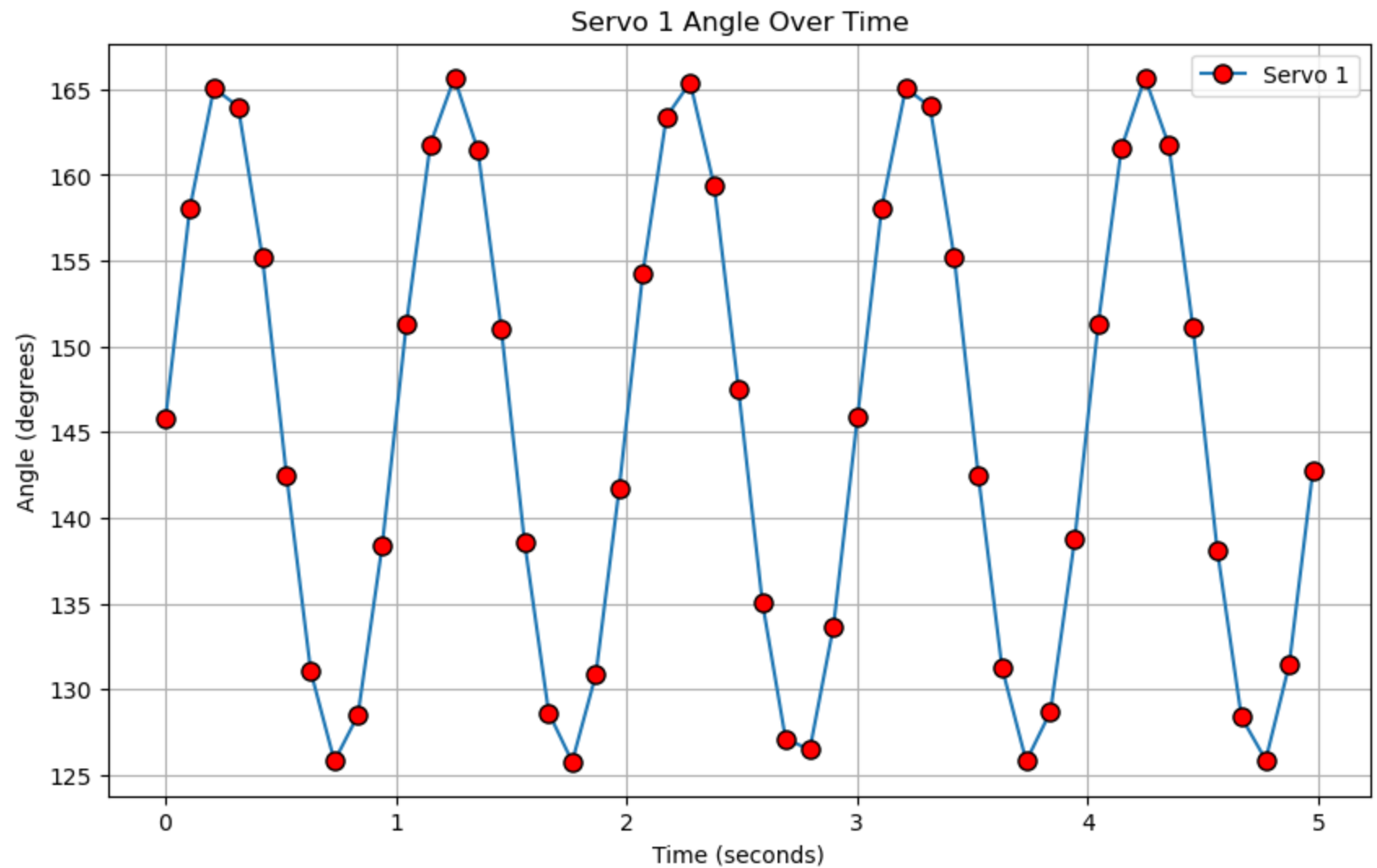
```
Servo 1's angles are:
[145.78129622792707, 158.02446181229797, 165.07994056820394, 163.98612768588947, 155.21371965189059, 142.43
03578732292, 131.02438631198658, 125.7906984941676, 128.47117386051374, 138.3345948480874, 151.284310852238
92, 161.7983643862739, 165.6749287749013, 161.4321341641765, 151.0470785812591, 138.60449125997604, 128.618
78646483643, 125.76260448797433, 130.84945403097515, 141.68541076428707, 154.27170628757426, 163.3925829887
1147, 165.4137768856514, 159.3516127892401, 147.53038078857216, 135.06934599208125, 127.1031776700238, 126.
46398829242054, 133.65282375213806, 145.86260708977633, 158.0887116459303, 165.0735065456351, 163.997211812
12936, 155.22651716888495, 142.44499216867413, 131.2528233585224, 125.78988155235999, 128.68284316023482, 1
38.71558628216766, 151.29929323691826, 161.57148698724575, 165.67854470827888, 161.74568538010288, 151.0671
6334824915, 138.1266170768967, 128.3580939340385, 125.86649931433823, 131.41983064936085, 142.7605058709218
6]
```

```python
In [267… # graph servo 2 angles
start_time = time.time()
duration = 5.0

times = []
servo2_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
    times.append(current_time)
    servo2 = 115.92 + (15 * math.sin((2 * math.pi / 1) * current_time + 0))
    servo2_angles.append(servo2)

    time.sleep(0.1)  # Ensure this is correct and consistent

# Plot
plt.figure(figsize=(10, 6))
plt.plot(times, servo2_angles, label='Servo 2', linestyle='-', marker='o', markersize=8, markerfacecolor='
plt.xlabel('Time (seconds)')
plt.ylabel('Angle (degrees)')
plt.title('Servo 2 Angle Over Time')
plt.legend()
plt.grid(True)
plt.show()
print(f"Servo 2's angles are: \n{servo2_angles}")
```

Servo 2 Angle Over Time
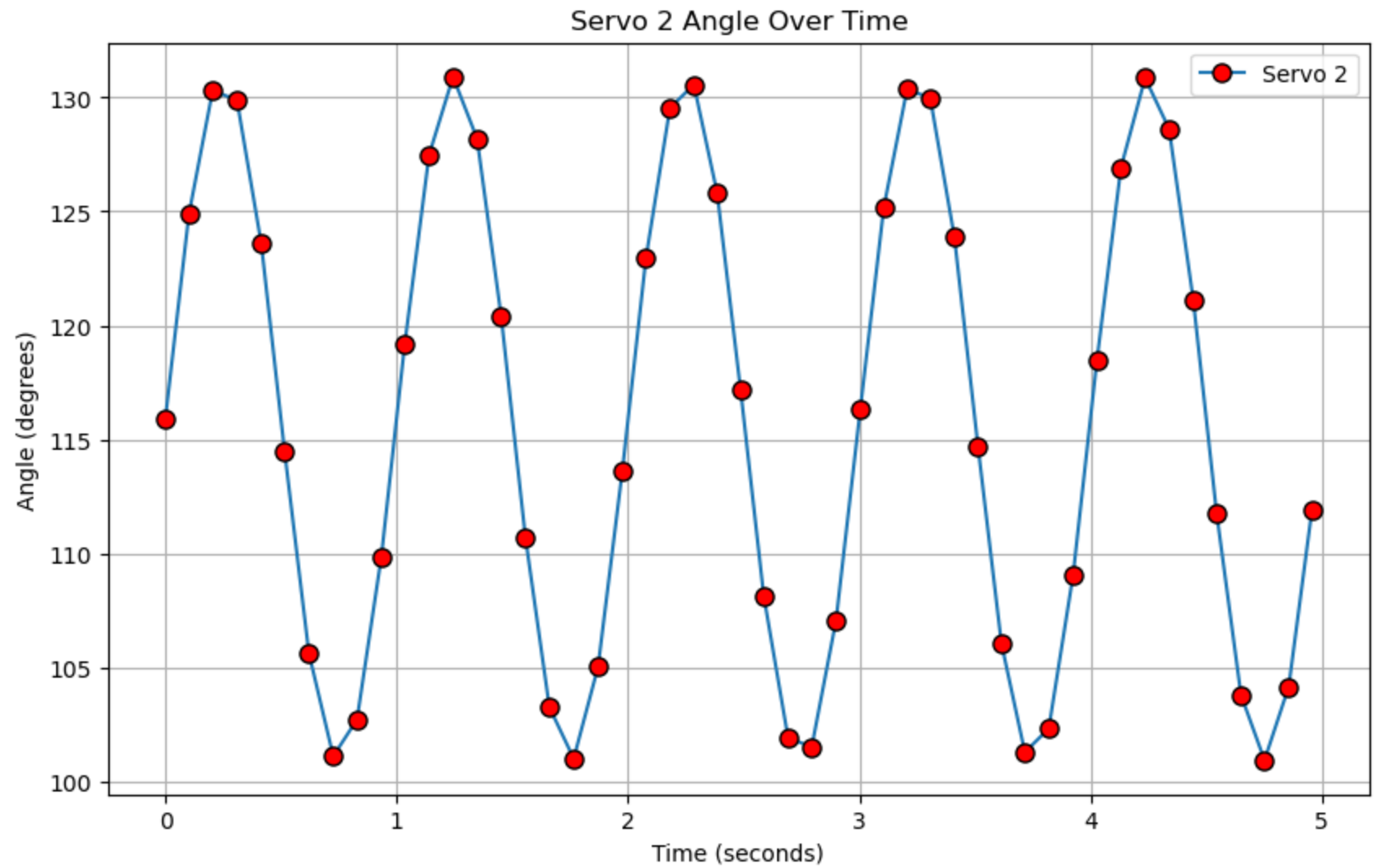
```
Servo 2's angles are:
[115.9262243066316, 124.88086381620786, 130.3117181915052, 129.88214512817748, 123.58724362642366, 114.4497
4289505659, 105.60485239187095, 101.09391520248327, 102.70680532004859, 109.83690231017792, 119.20252823248
08, 127.48802520916794, 130.90823032758146, 128.19962719859964, 120.40145848725558, 110.68070547279027, 10
3.24343514673156, 100.98923019398362, 105.00788546241748, 113.61227685983081, 122.9804655647558, 129.544154
4634312, 130.56367397009834, 125.81031674772312, 117.19157874950852, 108.11503309005037, 101.9117670679571
6, 101.49530062192419, 107.0479473507782, 116.32691188315344, 125.18736018219234, 130.36029871460607, 129.9
812670152847, 123.89031041979054, 114.69887202335202, 106.03495525640525, 101.26873718707105, 102.307648904
1307, 109.03123396810727, 118.46698054070953, 126.92011621745505, 130.85767886223093, 128.6217646547909, 12
1.14242558768098, 111.72755313466597, 103.77678046708508, 100.92084460611272, 104.14653942988103, 111.91454
443521152]
```

```python
In [268…   # graph servo 3 angles
           start_time = time.time()
           duration = 5.0

           times = []
           servo3_angles = []

           while time.time() - start_time < duration:
               current_time = time.time() - start_time
               times.append(current_time)
               servo3 = 141.84 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
               servo3_angles.append(servo3)

               time.sleep(0.1)   # Ensure this is correct and consistent

           # Plot
           plt.figure(figsize=(10, 6))
           plt.plot(times, servo3_angles, label='Servo 3', linestyle='-', marker='o', markersize=8, markerfacecolor='
           plt.xlabel('Time (seconds)')
           plt.ylabel('Angle (degrees)')
           plt.title('Servo 3 Angle Over Time')
           plt.legend()
           plt.grid(True)
           plt.show()
           print(f"Servo 3's angles are: \n{servo3_angles}")
```
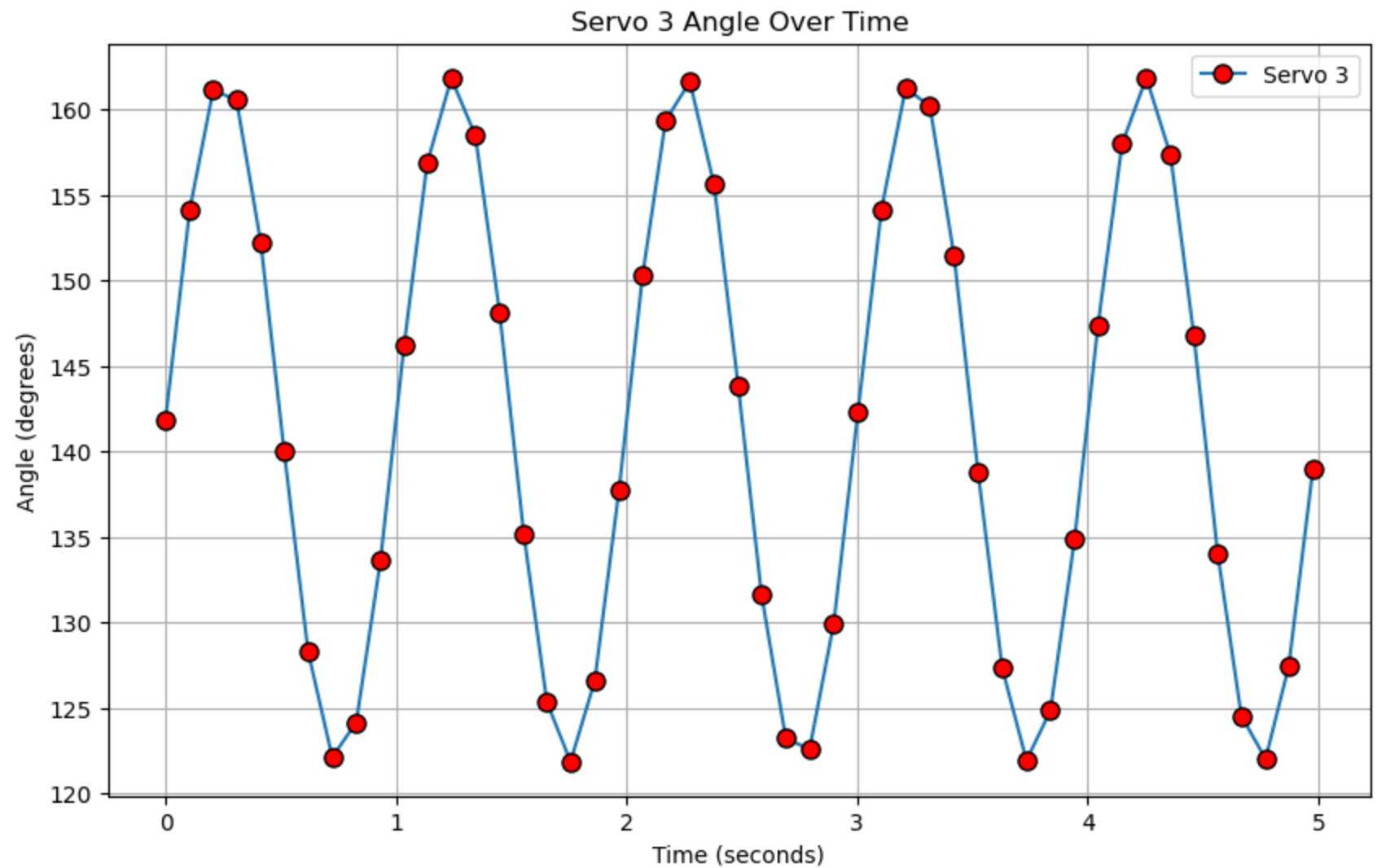
Servo 3 Angle Over Time

```
Servo 3's angles are:
[141.84701077142606, 154.10635601016904, 161.10639970769455, 160.52236440850913, 152.22035978921062, 139.97
046788831673, 128.3051046452649, 122.11960925195837, 124.15845883585571, 133.6048941254051, 146.15134107746
294, 156.82068353816408, 161.79883683910407, 158.4563309461387, 148.1391189138316, 135.1804001709241, 125.3
3854173247504, 121.8581979943962, 126.57708351894239, 137.70565745471512, 150.25731845141067, 159.332415769
10686, 161.60415232074632, 155.57742530234742, 143.782094413396, 131.61098342580908, 123.22148588355076, 12
2.59007573352648, 129.96525049588737, 142.3275298945521, 154.12988799331043, 161.22314628383782, 160.174574
81285896, 151.42285448897013, 138.80842661437077, 127.3242918952985, 121.93698502407915, 124.8366881267889
4, 134.86508343312818, 147.32536687331014, 157.96535013684726, 161.83260303602952, 157.29838425655973, 146.
80053011656116, 134.0441191533585, 124.52803199693834, 122.02377029755608, 127.43111625537186, 138.96277861
86676]
```

```python
# graph servo 4 angles
start_time = time.time()
duration = 5.0

times = []
servo4_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
    times.append(current_time)
    servo4 = 155.52 + (15 * math.sin((2 * math.pi / 1) * current_time + 0))
    servo4_angles.append(servo4)

    time.sleep(0.1)  # Ensure this is correct and consistent

# Plot
plt.figure(figsize=(10, 6))
plt.plot(times, servo4_angles, label='Servo 4', linestyle='-', marker='o', markersize=8, markerfacecolor='
plt.xlabel('Time (seconds)')
plt.ylabel('Angle (degrees)')
plt.title('Servo 4 Angle Over Time')
plt.legend()
plt.grid(True)
plt.show()
print(f"Servo 4's angles are: \n{servo4_angles}")
```

Servo 4 Angle Over Time
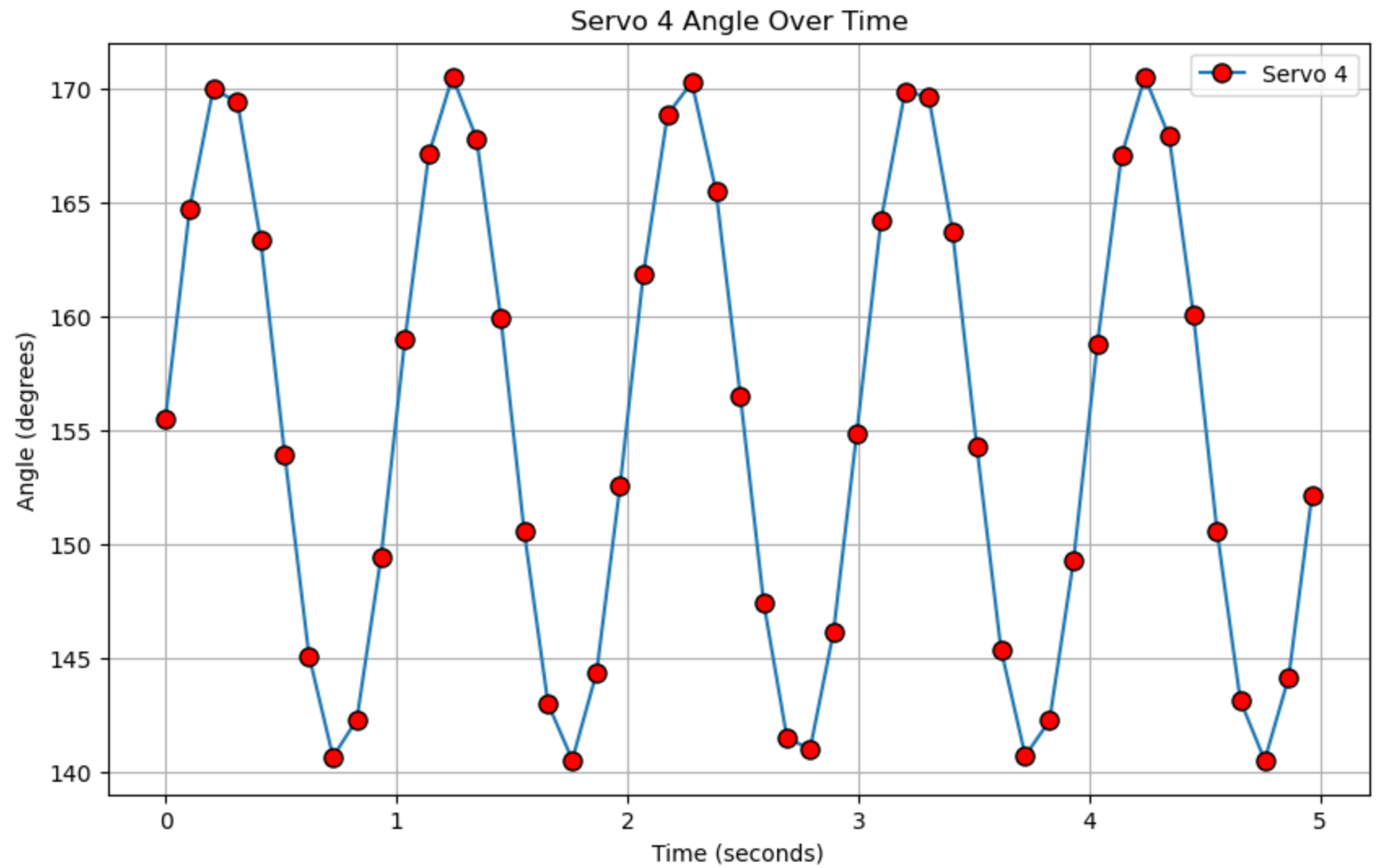
Servo 4's angles are:
[155.525370430671, 164.72006871984854, 169.98340444140666, 169.38460780596864, 163.34422377516015, 153.9385
5505399924, 145.12396168956406, 140.69332545449433, 142.32173566429185, 149.45623620900574, 158.99317322199
78, 167.12215290982647, 170.50600237794913, 167.80009175580318, 159.93600733743568, 150.60973836094786, 14
3.01334642748068, 140.561165518729, 144.38452589342666, 152.56451582032605, 161.84641844257916, 168.8522156
4305354, 170.26668101354085, 165.48604721906577, 156.51932785954986, 147.4321454627104, 141.54054626459094,
141.01699790626924, 146.1812870965199, 154.8900472897563, 164.21279083942173, 169.84846775307898, 169.64337
292691937, 163.7428278095996, 154.3242258558616, 145.40587578336724, 140.73785283272494, 142.2783647558680
4, 149.2785417863651, 158.80474269865957, 167.03546845559657, 170.49298606814, 167.8999267403417, 160.10709
766797018, 150.61685182169273, 143.14822467317342, 140.5461939419988, 144.17614544927903, 152.1827680946827
9]

```python
# graph servo 5 angles
start_time = time.time()
duration = 5.0

times = []
servo5_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
    times.append(current_time)
    servo5 = 114.52 + (20 * math.sin((2 * math.pi / 1) * current_time + 0))
    servo5_angles.append(servo5)

    time.sleep(0.1)  # Ensure this is correct and consistent

# Plot
plt.figure(figsize=(10, 6))
plt.plot(times, servo5_angles, label='Servo 5', linestyle='-', marker='o', markersize=8, markerfacecolor='
plt.xlabel('Time (seconds)')
plt.ylabel('Angle (degrees)')
plt.title('Servo 5 Angle Over Time')
plt.legend()
plt.grid(True)
plt.show()
print(f"Servo 5's angles are: \n{servo5_angles}")
```

Servo 5 Angle Over Time
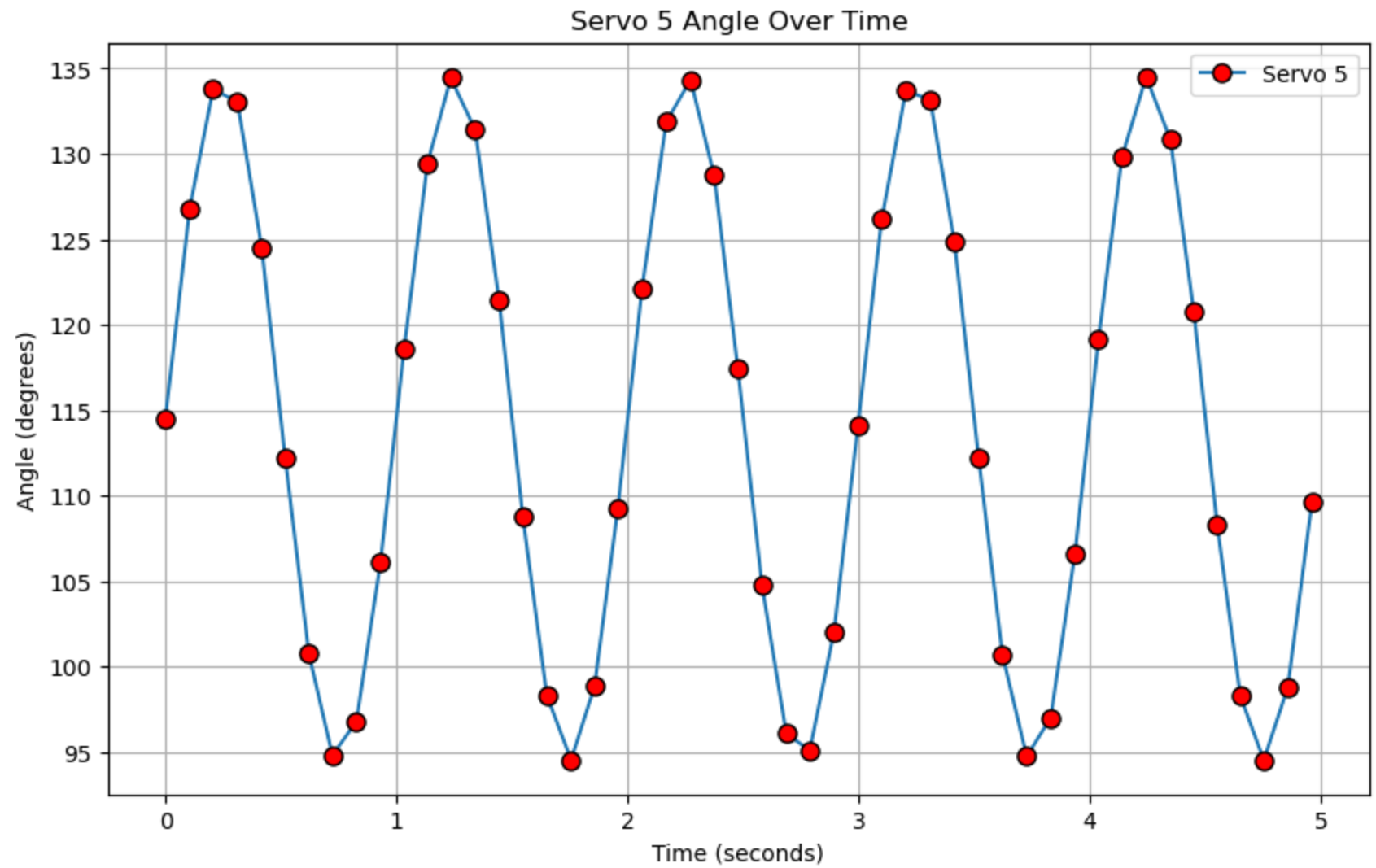
Servo 5's angles are:
[114.52653140245732, 126.78824903709065, 133.7809628064935, 133.0382124672826, 124.52281939889771, 112.1573
870187762, 100.7380882342889, 94.81425766426096, 96.78164824721678, 106.1136085943548, 118.54546771015113,
129.42173522185615, 134.42991076482397, 131.40776820715857, 121.40849822856097, 108.77049682559844, 98.2989
9998493781, 94.53127798677123, 98.84312717174285, 109.291016380269, 122.1329051857424, 131.87398618610018,
134.32495985810672, 128.75960919730164, 117.40083850019995, 104.76577947735178, 96.10735864897129, 95.07353
640054185, 102.02262310743892, 114.1039676810571, 126.14898228444885, 133.68321312192757, 133.167742312635
2, 124.81513219159591, 112.17488139184911, 100.69106875005649, 94.73632914735467, 97.01710733462903, 106.63
093524020027, 119.12606116491662, 129.80148754326007, 134.50142439445872, 130.8311752741636, 120.7305587058
8223, 108.27587373890292, 98.26773876210055, 94.52179593748568, 98.77638013437365, 109.63546464192466]

```python
In [271…  # graph servo 6 angles
          start_time = time.time()
          duration = 5.0

          times = []
          servo6_angles = []

          while time.time() - start_time < duration:
              current_time = time.time() - start_time
              times.append(current_time)
              servo6 = 172.08 - (15 * math.sin((2 * math.pi / 1) * current_time + 0))
              servo6_angles.append(servo6)

              time.sleep(0.1)  # Ensure this is correct and consistent

          # Plot
          plt.figure(figsize=(10, 6))
          plt.plot(times, servo6_angles, label='Servo 6', linestyle='-', marker='o', markersize=8, markerfacecolor='
          plt.xlabel('Time (seconds)')
          plt.ylabel('Angle (degrees)')
          plt.title('Servo 6 Angle Over Time')
          plt.legend()
          plt.grid(True)
          plt.show()
          print(f"Servo 6's angles are: \n{servo6_angles}")
```

Servo 6 Angle Over Time
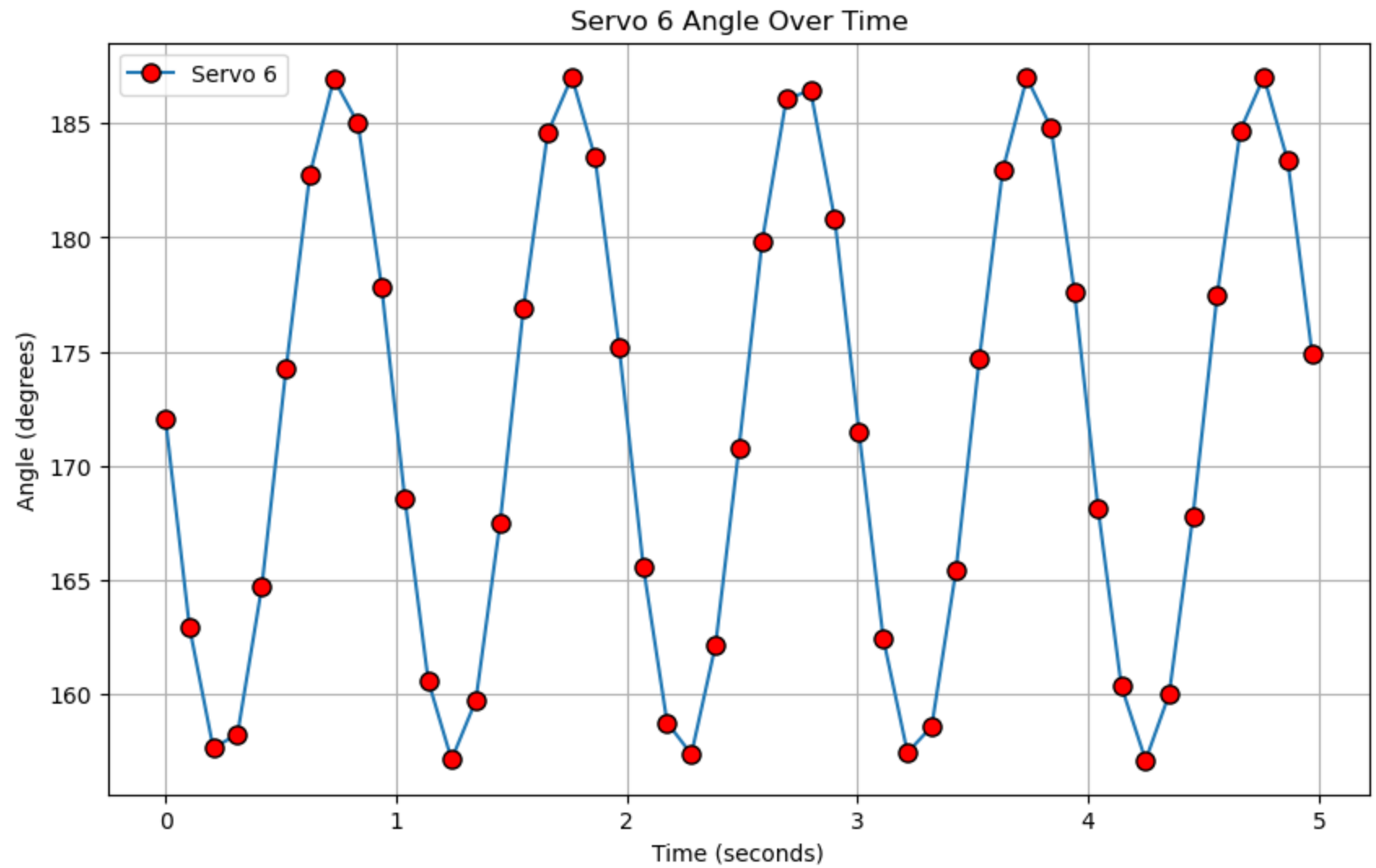
Servo 6's angles are:
[172.07480933269147, 162.88023299237324, 157.60771518086514, 158.22830816341852, 164.66753117360994, 174.22
112596447997, 182.7525724716553, 186.95942859682754, 184.99736961088956, 177.84766413881212, 168.5375707269
3378, 160.5401187882851, 157.10739403680773, 159.69394820167932, 167.48338304575742, 176.87672490510812, 18
4.58039740785784, 187.0396736125507, 183.52102815752045, 175.16998338662256, 165.52081593279146, 158.729696
93878065, 157.34097898355273, 162.1445545310773, 170.77461633196623, 179.82445430696447, 186.0734196296276
7, 186.447396195413, 180.78878847433612, 171.47312724133775, 162.41266128384027, 157.41073047832737, 158.56
531934888918, 165.37911840062733, 174.65392569135562, 182.93601808981145, 187.0028876117669, 184.7994831716
7901, 177.59151998492067, 168.09284567353362, 160.31683592599765, 157.0806285252441, 159.96682147809548, 16
7.76522549842238, 177.43636695389108, 184.70048362194885, 187.04438338901141, 183.35955751193038, 174.92748
091276388]

```
In [272…   # graph servo 7 angles
           start_time = time.time()
           duration = 5.0

           times = []
           servo7_angles = []

           while time.time() - start_time < duration:
               current_time = time.time() - start_time
               times.append(current_time)
               servo7 = 130.56 - (20 * math.sin((2 * math.pi / 1) * current_time + 0))
               servo7_angles.append(servo7)

               time.sleep(0.1)   # Ensure this is correct and consistent

           # Plot
           plt.figure(figsize=(10, 6))
           plt.plot(times, servo7_angles, label='Servo 7', linestyle='-', marker='o', markersize=8, markerfacecolor='
           plt.xlabel('Time (seconds)')
           plt.ylabel('Angle (degrees)')
           plt.title('Servo 7 Angle Over Time')
           plt.legend()
           plt.grid(True)
           plt.show()
           print(f"Servo 7's angles are: \n{servo7_angles}")
```
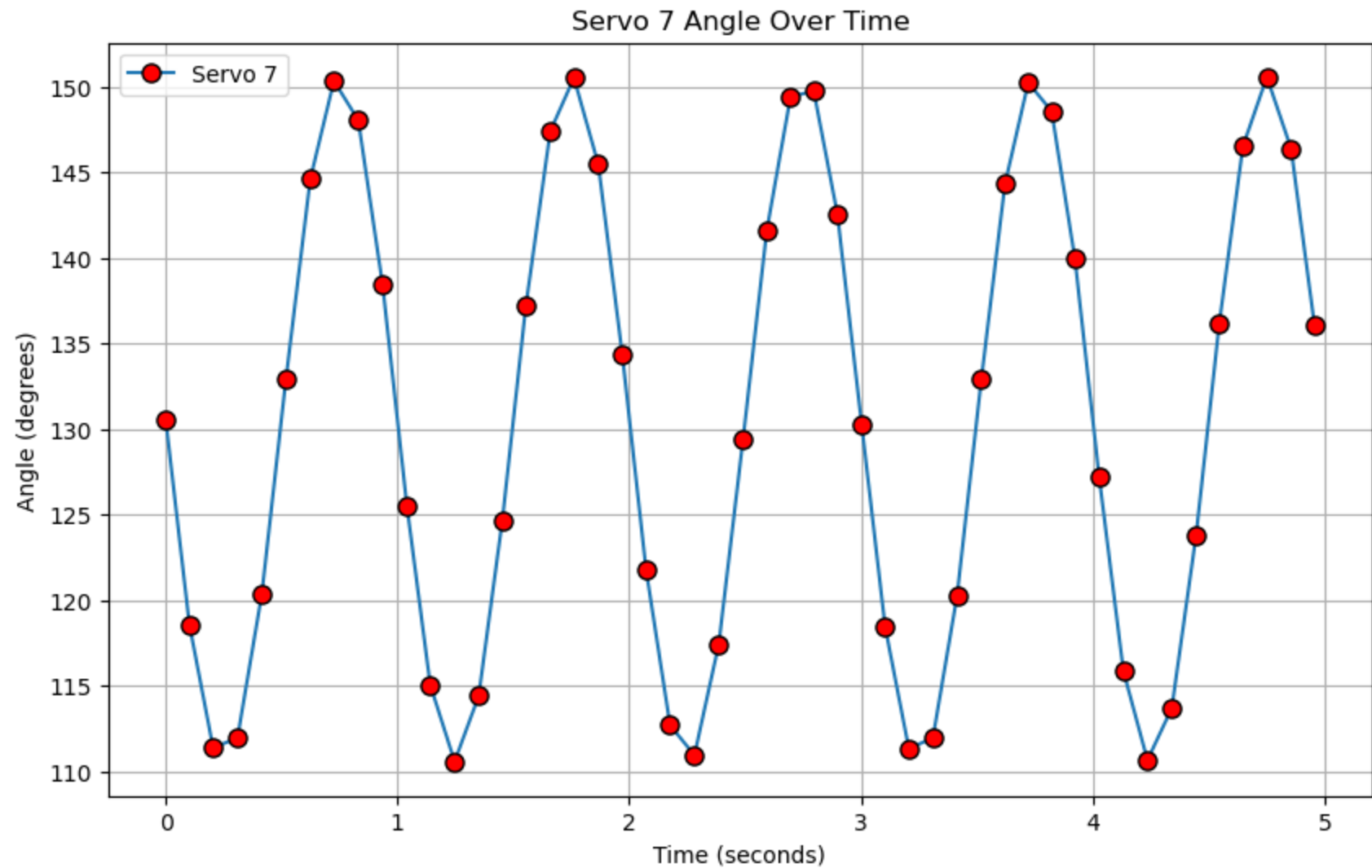
Servo 7 Angle Over Time

Servo 7's angles are:
[130.55271958353077, 118.57823440183073, 111.36347574798803, 111.95320659510811, 120.36261617376235, 132.93
58515524959, 144.59476746530186, 150.32966626155357, 148.03301893439973, 138.39545552039357, 125.4667718549
7323, 115.04627319821145, 110.56525913766535, 114.39807571503601, 124.66932742589654, 137.22423276410558, 1
47.38773249280493, 150.51049913770055, 145.45789792272413, 134.3871113771585, 121.74349130303592, 112.68637
667612117, 110.93787411968526, 117.43132808083197, 129.3636403532562, 141.6071755623437, 149.3910629781842
7, 149.74676031216305, 142.53694328372688, 130.22047325836036, 118.42785445646862, 111.32752776733784, 111.
94548244373314, 120.2535424065902, 132.8784272630497, 144.2981438510104, 150.2268967822798, 148.55892034711
167, 139.93081210981666, 127.20725940697028, 115.84850716506197, 110.64667935112885, 113.68928303272926, 12
3.81907180527375, 136.19191489268937, 146.49564018994184, 150.55996207492095, 146.37425695213892, 136.09732
303337717]

```python
# graph servo 8 angles
start_time = time.time()
duration = 5.0

times = []
servo8_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
    times.append(current_time)
    servo8 = 122.16 - (15 * math.sin((2 * math.pi / 1) * current_time + 0))
    servo8_angles.append(servo8)

    time.sleep(0.1)  # Ensure this is correct and consistent

# Plot
plt.figure(figsize=(10, 6))
plt.plot(times, servo8_angles, label='Servo 8', linestyle='-', marker='o', markersize=8, markerfacecolor='
plt.xlabel('Time (seconds)')
plt.ylabel('Angle (degrees)')
plt.title('Servo 8 Angle Over Time')
plt.legend()
plt.grid(True)
plt.show()
print(f"Servo 8's angles are: \n{servo8_angles}")
```

Servo 8 Angle Over Time
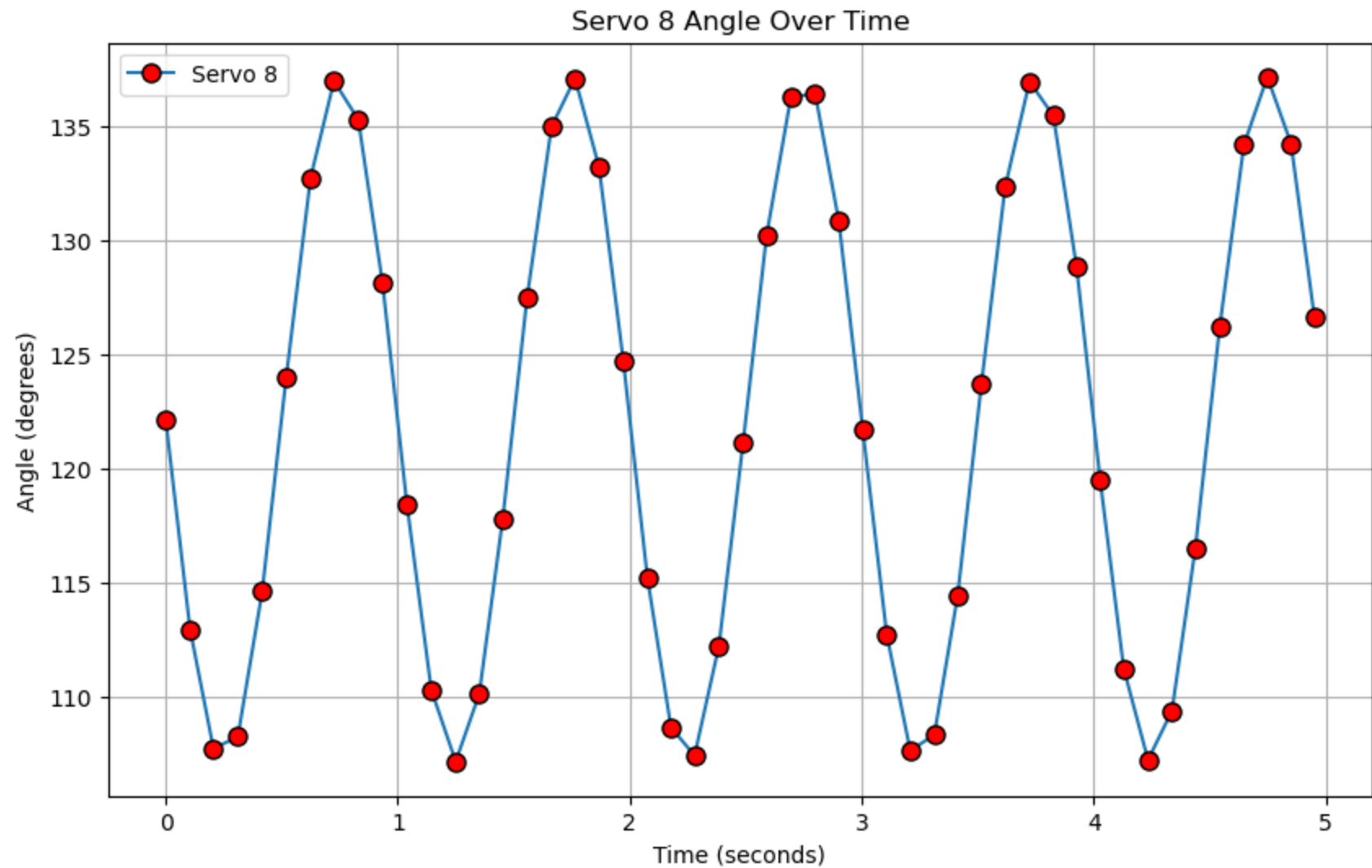
```
Servo 8's angles are:
[122.15469698058985, 112.96021524443032, 107.72904301216548, 108.24980594947442, 114.61453576905103, 124.01
92621927337, 132.74157891633706, 136.9824805943716, 135.290223528094, 128.10726116487587, 118.4276311150227
3, 110.30225170177796, 107.16000614009425, 110.12607754843506, 117.79203450843379, 127.50891512429745, 134.
97833481490724, 137.09804663401925, 133.21454225569482, 124.675773820321181, 115.22841421676047, 108.6615152
1182631, 107.4231703659479, 112.23609136415133, 121.15730909084644, 130.22492400037598, 136.27646426371922,
136.4307849575005, 130.8439619684187, 121.74176730919262, 112.71823726978074, 107.63811601781285, 108.33609
420103514, 114.42530457572767, 123.70696212583692, 132.33170049238265, 136.9547955883649, 135.4647186215620
7, 128.82493243313158, 119.46582353789935, 111.2331572970126, 107.23085036296305, 109.38499462475484, 116.4
9968615977524, 126.20565238078993, 134.19820021671384, 137.1595932542942, 134.24492756288618, 126.639635699
75984]
```