In [151…
```
import math
from lx16a import *
import time
from math import sin, cos
import matplotlib.pyplot as plt
```

In [152…
```
# 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 oscill
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 ev
```

In [153…
```
# 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
    servo1 = 146.68 + 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 + math.pi)
    print(f"Servo 2 is at {servo2} degrees.")
    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 + math.pi)
    print(f"Servo 4 is at {servo4} 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 + math.pi)
    print(f"Servo 6 is at {servo6} 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 + math.pi)
    print(f"Servo 8 is at {servo8} degrees.")
    time.sleep(0.1)                     # Update frequency, adjust as necessary for smoothness vs response
```

```
Servo 1 is at 147.5979087605883 degrees.
Servo 2 is at 115.23156842955878 degrees.
Servo 3 is at 142.7579087605883 degrees.
Servo 4 is at 154.83156842955879 degrees.
Servo 5 is at 115.43790876058829 degrees.
Servo 6 is at 172.76843157044124 degrees.
Servo 7 is at 129.6420912394117 degrees.
Servo 8 is at 122.84843157044122 degrees.
Servo 1 is at 159.67945590441616 degrees.
Servo 2 is at 106.17040807168789 degrees.
Servo 3 is at 154.83945590441616 degrees.
Servo 4 is at 145.7704080716879 degrees.
Servo 5 is at 127.51945590441615 degrees.
Servo 6 is at 181.8295919283121 degrees.
Servo 7 is at 117.56054409558385 degrees.
Servo 8 is at 131.9095919283121 degrees.
Servo 1 is at 166.27191331900778 degrees.
Servo 2 is at 101.22606501074418 degrees.
Servo 3 is at 161.43191331900778 degrees.
Servo 4 is at 140.82606501074417 degrees.
Servo 5 is at 134.11191331900775 degrees.
Servo 6 is at 186.77393498925585 degrees.
Servo 7 is at 110.96808668099223 degrees.
Servo 8 is at 136.85393498925583 degrees.
Servo 1 is at 164.73901940829705 degrees.
Servo 2 is at 102.37573544377722 degrees.
Servo 3 is at 159.89901940829705 degrees.
Servo 4 is at 141.9757354437772 degrees.
Servo 5 is at 132.57901940829706 degrees.
Servo 6 is at 185.6242645562228 degrees.
Servo 7 is at 112.50098059170296 degrees.
Servo 8 is at 135.7042645562228 degrees.
Servo 1 is at 155.686166595619 degrees.
Servo 2 is at 109.16537505328574 degrees.
Servo 3 is at 150.846166595619 degrees.
Servo 4 is at 148.76537505328577 degrees.
Servo 5 is at 123.526166595619 degrees.
Servo 6 is at 178.83462494671426 degrees.
Servo 7 is at 121.553833404381 degrees.
Servo 8 is at 128.91462494671424 degrees.
Servo 1 is at 142.87979953639672 degrees.
Servo 2 is at 118.77015034770247 degrees.
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Servo 3 is at 138.0397995363967 degrees.
Servo 4 is at 158.3701503477025 degrees.
Servo 5 is at 110.7197995363967 degrees.
Servo 6 is at 169.22984965229753 degrees.
Servo 7 is at 134.3602004636033 degrees.
Servo 8 is at 119.30984965229753 degrees.
Servo 1 is at 131.91516060026888 degrees.
Servo 2 is at 126.99362954979836 degrees.
Servo 3 is at 127.07516060026886 degrees.
Servo 4 is at 166.59362954979838 degrees.
Servo 5 is at 99.75516060026885 degrees.
Servo 6 is at 161.00637045020164 degrees.
Servo 7 is at 145.32483939973113 degrees.
Servo 8 is at 111.08637045020164 degrees.
Servo 1 is at 126.74261423110661 degrees.
Servo 2 is at 130.87303932667004 degrees.
Servo 3 is at 121.90261423110661 degrees.
Servo 4 is at 170.47303932667006 degrees.
Servo 5 is at 94.5826142311066 degrees.
Servo 6 is at 157.12696067332996 degrees.
Servo 7 is at 150.4973857688934 degrees.
Servo 8 is at 107.20696067332996 degrees.
Servo 1 is at 129.67736647405002 degrees.
Servo 2 is at 128.6719751444625 degrees.
Servo 3 is at 124.83736647405001 degrees.
Servo 4 is at 168.2719751444625 degrees.
Servo 5 is at 97.51736647405002 degrees.
Servo 6 is at 159.32802485553754 degrees.
Servo 7 is at 147.56263352595 degrees.
Servo 8 is at 109.4080248555375 degrees.
Servo 1 is at 139.70814419797884 degrees.
Servo 2 is at 121.14889185151588 degrees.
Servo 3 is at 134.86814419797884 degrees.
Servo 4 is at 160.74889185151588 degrees.
Servo 5 is at 107.54814419797883 degrees.
Servo 6 is at 166.85110814848414 degrees.
Servo 7 is at 137.53185580202117 degrees.
Servo 8 is at 116.93110814848413 degrees.
Servo 1 is at 152.55480867132584 degrees.
Servo 2 is at 111.51389349650562 degrees.
Servo 3 is at 147.71480867132584 degrees.
Servo 4 is at 151.11389349650563 degrees.
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Servo 5 is at 120.39480867132583 degrees.
Servo 6 is at 176.4861065034944 degrees.
Servo 7 is at 124.68519132867416 degrees.
Servo 8 is at 126.56610650349438 degrees.
Servo 1 is at 163.05887347697563 degrees.
Servo 2 is at 103.63584489226828 degrees.
Servo 3 is at 158.21887347697563 degrees.
Servo 4 is at 143.2358448922683 degrees.
Servo 5 is at 130.8988734769756 degrees.
Servo 6 is at 184.36415510773173 degrees.
Servo 7 is at 114.18112652302437 degrees.
Servo 8 is at 134.44415510773172 degrees.
Servo 1 is at 166.66843755202754 degrees.
Servo 2 is at 100.92867183597934 degrees.
Servo 3 is at 161.82843755202754 degrees.
Servo 4 is at 140.52867183597937 degrees.
Servo 5 is at 134.50843755202754 degrees.
Servo 6 is at 187.07132816402066 degrees.
Servo 7 is at 110.57156244797247 degrees.
Servo 8 is at 137.15132816402064 degrees.
Servo 1 is at 162.27540570132913 degrees.
Servo 2 is at 104.22344572400316 degrees.
Servo 3 is at 157.43540570132913 degrees.
Servo 4 is at 143.82344572400316 degrees.
Servo 5 is at 130.1154057013291 degrees.
Servo 6 is at 183.77655427599686 degrees.
Servo 7 is at 114.96459429867089 degrees.
Servo 8 is at 133.85655427599684 degrees.
Servo 1 is at 151.83445094102004 degrees.
Servo 2 is at 112.05416179423499 degrees.
Servo 3 is at 146.99445094102003 degrees.
Servo 4 is at 151.654161794235 degrees.
Servo 5 is at 119.67445094102001 degrees.
Servo 6 is at 175.94583820576503 degrees.
Servo 7 is at 125.40554905897999 degrees.
Servo 8 is at 126.02583820576501 degrees.
Servo 1 is at 139.26038870135628 degrees.
Servo 2 is at 121.48470847398279 degrees.
Servo 3 is at 134.42038870135627 degrees.
Servo 4 is at 161.0847084739828 degrees.
Servo 5 is at 107.10038870135627 degrees.
Servo 6 is at 166.51529152601722 degrees.
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Servo 7 is at 137.97961129864373 degrees.
Servo 8 is at 116.5952915260172 degrees.
Servo 1 is at 129.7325784649048 degrees.
Servo 2 is at 128.6305661513214 degrees.
Servo 3 is at 124.8925784649048 degrees.
Servo 4 is at 168.23056615132143 degrees.
Servo 5 is at 97.5725784649048 degrees.
Servo 6 is at 159.3694338486786 degrees.
Servo 7 is at 147.5074215350952 degrees.
Servo 8 is at 109.4494338486786 degrees.
Servo 1 is at 126.73925171326368 degrees.
Servo 2 is at 130.87556121505224 degrees.
Servo 3 is at 121.89925171326368 degrees.
Servo 4 is at 170.47556121505227 degrees.
Servo 5 is at 94.57925171326366 degrees.
Servo 6 is at 157.12443878494776 degrees.
Servo 7 is at 150.50074828673633 degrees.
Servo 8 is at 107.20443878494774 degrees.
Servo 1 is at 131.5103920246458 degrees.
Servo 2 is at 127.29720598151567 degrees.
Servo 3 is at 126.67039202464578 degrees.
Servo 4 is at 166.89720598151567 degrees.
Servo 5 is at 99.35039202464577 degrees.
Servo 6 is at 160.70279401848435 degrees.
Servo 7 is at 145.7296079753542 degrees.
Servo 8 is at 110.78279401848432 degrees.
Servo 1 is at 142.73136523169543 degrees.
Servo 2 is at 118.88147607622844 degrees.
Servo 3 is at 137.89136523169543 degrees.
Servo 4 is at 158.48147607622843 degrees.
Servo 5 is at 110.57136523169542 degrees.
Servo 6 is at 169.1185239237716 degrees.
Servo 7 is at 134.50863476830457 degrees.
Servo 8 is at 119.19852392377156 degrees.
Servo 1 is at 155.51836566327387 degrees.
Servo 2 is at 109.29122575254459 degrees.
Servo 3 is at 150.67836566327384 degrees.
Servo 4 is at 148.8912257525446 degrees.
Servo 5 is at 123.35836566327384 degrees.
Servo 6 is at 178.7087742474554 degrees.
Servo 7 is at 121.72163433672615 degrees.
Servo 8 is at 128.7887742474554 degrees.
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Servo 1 is at 164.65225386390944 degrees.
Servo 2 is at 102.44080960206793 degrees.
Servo 3 is at 159.81225386390943 degrees.
Servo 4 is at 142.04080960206795 degrees.
Servo 5 is at 132.4922538639094 degrees.
Servo 6 is at 185.55919039793207 degrees.
Servo 7 is at 112.58774613609057 degrees.
Servo 8 is at 135.63919039793205 degrees.
Servo 1 is at 166.28146156053737 degrees.
Servo 2 is at 101.21890382959697 degrees.
Servo 3 is at 161.44146156053736 degrees.
Servo 4 is at 140.818903829597 degrees.
Servo 5 is at 134.12146156053737 degrees.
Servo 6 is at 186.78109617040303 degrees.
Servo 7 is at 110.95853843946263 degrees.
Servo 8 is at 136.86109617040302 degrees.
Servo 1 is at 159.75588460462112 degrees.
Servo 2 is at 106.11308654653416 degrees.
Servo 3 is at 154.9158846046211 degrees.
Servo 4 is at 145.71308654653419 degrees.
Servo 5 is at 127.5958846046211 degrees.
Servo 6 is at 181.88691345346584 degrees.
Servo 7 is at 117.4841153953789 degrees.
Servo 8 is at 131.96691345346582 degrees.
Servo 1 is at 147.71311947212797 degrees.
Servo 2 is at 115.145160395904 degrees.
Servo 3 is at 142.87311947212797 degrees.
Servo 4 is at 154.745160395904 degrees.
Servo 5 is at 115.55311947212796 degrees.
Servo 6 is at 172.85483960409601 degrees.
Servo 7 is at 129.52688052787204 degrees.
Servo 8 is at 122.934839604096 degrees.
Servo 1 is at 135.2265304259991 degrees.
Servo 2 is at 124.51010218050068 degrees.
Servo 3 is at 130.3865304259991 degrees.
Servo 4 is at 164.1101021805007 degrees.
Servo 5 is at 103.06653042599909 degrees.
Servo 6 is at 163.48989781949933 degrees.
Servo 7 is at 142.0134695740009 degrees.
Servo 8 is at 113.56989781949932 degrees.
Servo 1 is at 127.57704354600041 degrees.
Servo 2 is at 130.2472173404997 degrees.
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Servo 3 is at 122.73704354600041 degrees.
Servo 4 is at 169.8472173404997 degrees.
Servo 5 is at 95.4170435460004 degrees.
Servo 6 is at 157.75278265950033 degrees.
Servo 7 is at 149.66295645399958 degrees.
Servo 8 is at 107.83278265950031 degrees.
Servo 1 is at 127.78030494152176 degrees.
Servo 2 is at 130.09477129385868 degrees.
Servo 3 is at 122.94030494152176 degrees.
Servo 4 is at 169.6947712938587 degrees.
Servo 5 is at 95.62030494152174 degrees.
Servo 6 is at 157.90522870614132 degrees.
Servo 7 is at 149.45969505847825 degrees.
Servo 8 is at 107.98522870614131 degrees.
Servo 1 is at 135.58770963475573 degrees.
Servo 2 is at 124.23921777393322 degrees.
Servo 3 is at 130.74770963475572 degrees.
Servo 4 is at 163.83921777393323 degrees.
Servo 5 is at 103.42770963475571 degrees.
Servo 6 is at 163.7607822260668 degrees.
Servo 7 is at 141.65229036524428 degrees.
Servo 8 is at 113.84078222606678 degrees.
Servo 1 is at 147.95159676145792 degrees.
Servo 2 is at 114.96630242890657 degrees.
Servo 3 is at 143.11159676145792 degrees.
Servo 4 is at 154.5663024289066 degrees.
Servo 5 is at 115.7915967614579 degrees.
Servo 6 is at 173.03369757109343 degrees.
Servo 7 is at 129.2884032385421 degrees.
Servo 8 is at 123.11369757109343 degrees.
Servo 1 is at 159.5737247453732 degrees.
Servo 2 is at 106.2497064409701 degrees.
Servo 3 is at 154.7337247453732 degrees.
Servo 4 is at 145.84970644097012 degrees.
Servo 5 is at 127.41372474537319 degrees.
Servo 6 is at 181.7502935590299 degrees.
Servo 7 is at 117.66627525462681 degrees.
Servo 8 is at 131.83029355902988 degrees.
Servo 1 is at 166.24227984150866 degrees.
Servo 2 is at 101.2482901188685 degrees.
Servo 3 is at 161.4022798415087 degrees.
Servo 4 is at 140.8482901188685 degrees.
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Servo 5 is at 134.08227984150867 degrees.
Servo 6 is at 186.75170988113152 degrees.
Servo 7 is at 110.99772015849133 degrees.
Servo 8 is at 136.8317098811315 degrees.
Servo 1 is at 164.68056594497244 degrees.
Servo 2 is at 102.41957554127067 degrees.
Servo 3 is at 159.84056594497244 degrees.
Servo 4 is at 142.01957554127068 degrees.
Servo 5 is at 132.52056594497242 degrees.
Servo 6 is at 185.58042445872934 degrees.
Servo 7 is at 112.55943405502757 degrees.
Servo 8 is at 135.66042445872932 degrees.
Servo 1 is at 155.53381624440496 degrees.
Servo 2 is at 109.2796378166963 degrees.
Servo 3 is at 150.69381624440496 degrees.
Servo 4 is at 148.8796378166963 degrees.
Servo 5 is at 123.37381624440494 degrees.
Servo 6 is at 178.72036218330373 degrees.
Servo 7 is at 121.70618375559506 degrees.
Servo 8 is at 128.80036218330372 degrees.
Servo 1 is at 143.27088785466097 degrees.
Servo 2 is at 118.47683410900427 degrees.
Servo 3 is at 138.43088785466097 degrees.
Servo 4 is at 158.07683410900427 degrees.
Servo 5 is at 111.11088785466097 degrees.
Servo 6 is at 169.52316589099576 degrees.
Servo 7 is at 133.96911214533904 degrees.
Servo 8 is at 119.60316589099573 degrees.
Servo 1 is at 132.29293019792362 degrees.
Servo 2 is at 126.71030235155729 degrees.
Servo 3 is at 127.45293019792362 degrees.
Servo 4 is at 166.3103023515573 degrees.
Servo 5 is at 100.1329301979236 degrees.
Servo 6 is at 161.2896976484427 degrees.
Servo 7 is at 144.94706980207638 degrees.
Servo 8 is at 111.36969764844271 degrees.
Servo 1 is at 126.79617887420659 degrees.
Servo 2 is at 130.83286584434506 degrees.
Servo 3 is at 121.95617887420659 degrees.
Servo 4 is at 170.4328658443451 degrees.
Servo 5 is at 94.63617887420656 degrees.
Servo 6 is at 157.16713415565494 degrees.
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Servo 7 is at 150.44382112579342 degrees.
Servo 8 is at 107.24713415565493 degrees.
Servo 1 is at 129.6542322210832 degrees.
Servo 2 is at 128.68932583418763 degrees.
Servo 3 is at 124.81423222108319 degrees.
Servo 4 is at 168.28932583418762 degrees.
Servo 5 is at 97.49423222108318 degrees.
Servo 6 is at 159.3106741658124 degrees.
Servo 7 is at 147.58576777891682 degrees.
Servo 8 is at 109.39067416581238 degrees.
Servo 1 is at 139.66399176614934 degrees.
Servo 2 is at 121.18200617538801 degrees.
Servo 3 is at 134.82399176614933 degrees.
Servo 4 is at 160.78200617538803 degrees.
Servo 5 is at 107.50399176614931 degrees.
Servo 6 is at 166.817993824612 degrees.
Servo 7 is at 137.57600823385067 degrees.
Servo 8 is at 116.89799382461199 degrees.
Servo 1 is at 152.62344660137077 degrees.
Servo 2 is at 111.46241504897193 degrees.
Servo 3 is at 147.78344660137077 degrees.
Servo 4 is at 151.06241504897193 degrees.
Servo 5 is at 120.46344660137076 degrees.
Servo 6 is at 176.5375849510281 degrees.
Servo 7 is at 124.61655339862924 degrees.
Servo 8 is at 126.61758495102806 degrees.
Servo 1 is at 163.08421115010424 degrees.
Servo 2 is at 103.61684163742184 degrees.
Servo 3 is at 158.2442111501042 degrees.
Servo 4 is at 143.21684163742185 degrees.
Servo 5 is at 130.9242111501042 degrees.
Servo 6 is at 184.38315836257817 degrees.
Servo 7 is at 114.15578884989579 degrees.
Servo 8 is at 134.46315836257816 degrees.
Servo 1 is at 166.65376412393547 degrees.
Servo 2 is at 100.93967690704841 degrees.
Servo 3 is at 161.81376412393547 degrees.
Servo 4 is at 140.5396769070484 degrees.
Servo 5 is at 134.49376412393548 degrees.
Servo 6 is at 187.06032309295162 degrees.
Servo 7 is at 110.58623587606453 degrees.
Servo 8 is at 137.1403230929516 degrees.
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Servo 1 is at 161.82910734618383 degrees.
Servo 2 is at 104.55816949036213 degrees.
Servo 3 is at 156.98910734618383 degrees.
Servo 4 is at 144.15816949036216 degrees.
Servo 5 is at 129.6691073461838 degrees.
Servo 6 is at 183.44183050963787 degrees.
Servo 7 is at 115.41089265381619 degrees.
Servo 8 is at 133.52183050963785 degrees.
Servo 1 is at 150.62801797876043 degrees.
Servo 2 is at 112.9589865159297 degrees.
Servo 3 is at 145.78801797876042 degrees.
Servo 4 is at 152.5589865159297 degrees.
Servo 5 is at 118.4680179787604 degrees.
Servo 6 is at 175.04101348407033 degrees.
Servo 7 is at 126.6119820212396 degrees.
Servo 8 is at 125.1210134840703 degrees.
Servo 1 is at 137.76447405568618 degrees.
Servo 2 is at 122.60664445823537 degrees.
Servo 3 is at 132.92447405568618 degrees.
Servo 4 is at 162.2066444582354 degrees.
Servo 5 is at 105.60447405568617 degrees.
Servo 6 is at 165.39335554176463 degrees.
Servo 7 is at 139.47552594431383 degrees.
Servo 8 is at 115.47335554176463 degrees.
Servo 1 is at 128.68870215492979 degrees.
Servo 2 is at 129.41347338380265 degrees.
Servo 3 is at 123.84870215492977 degrees.
Servo 4 is at 169.01347338380265 degrees.
Servo 5 is at 96.52870215492976 degrees.
Servo 6 is at 158.58652661619738 degrees.
Servo 7 is at 148.55129784507022 degrees.
Servo 8 is at 108.66652661619734 degrees.
Servo 1 is at 127.01513739254513 degrees.
Servo 2 is at 130.66864695559116 degrees.
Servo 3 is at 122.17513739254512 degrees.
Servo 4 is at 170.26864695559118 degrees.
Servo 5 is at 94.85513739254512 degrees.
Servo 6 is at 157.33135304440884 degrees.
Servo 7 is at 150.2248626074549 degrees.
Servo 8 is at 107.41135304440883 degrees.
Servo 1 is at 133.43134778332734 degrees.
Servo 2 is at 125.8564891625045 degrees.
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Servo 3 is at 128.59134778332734 degrees.
Servo 4 is at 165.4564891625045 degrees.
Servo 5 is at 101.27134778332734 degrees.
Servo 6 is at 162.1435108374955 degrees.
Servo 7 is at 143.80865221667267 degrees.
Servo 8 is at 112.2235108374955 degrees.
Servo 1 is at 145.42431041126213 degrees.
Servo 2 is at 116.86176719155341 degrees.
Servo 3 is at 140.58431041126212 degrees.
Servo 4 is at 156.4617671915534 degrees.
Servo 5 is at 113.26431041126212 degrees.
Servo 6 is at 171.13823280844662 degrees.
Servo 7 is at 131.81568958873788 degrees.
Servo 8 is at 121.21823280844659 degrees.
```

In [163…

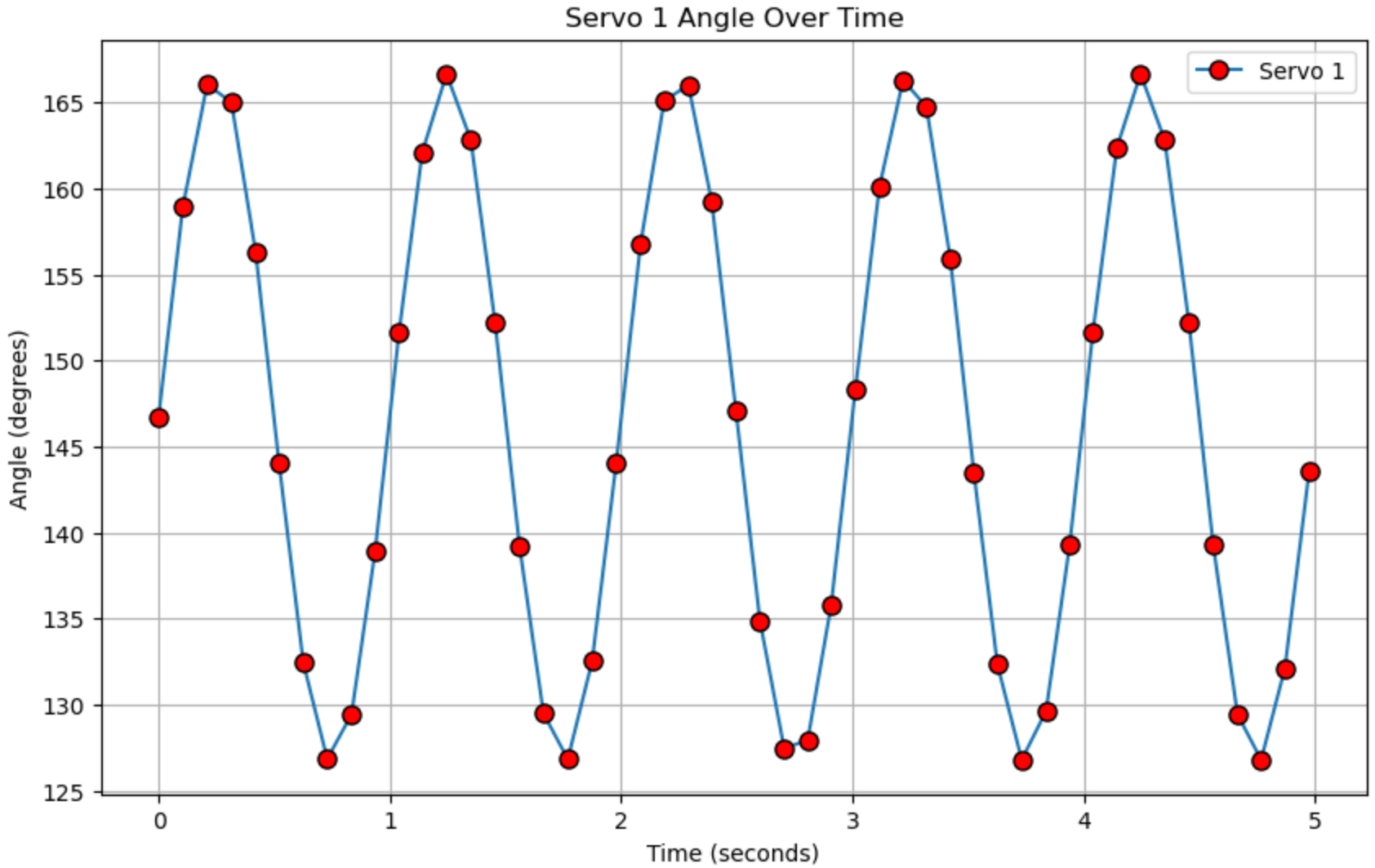
```python
# graph servo 1 angles
start_time = time.time()
duration = 5.0

times = []
servo1_angles = []

while time.time() - start_time < duration:
    current_time = time.time() - start_time
    times.append(current_time)
    servo1 = 146.68 + 20 * math.sin((2 * math.pi) * 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
Angle (degrees)
165
160
155
150
145
140
135
130
125
0
1
2
3
4
5
Time (seconds)

```
Servo 1's angles are:
[146.72458127972916, 158.95380878457905, 166.05845636058748, 165.02134298738827, 156.27784056538334, 144.03
14100492526, 132.43208317342854, 126.84605140981502, 129.43599642464554, 138.93331357722144, 151.6585521149
1441, 162.1079427721951, 166.67128005370336, 162.83169985006296, 152.20790824907394, 139.256799725107, 129.
49068520263413, 126.83301335754292, 132.51893739111583, 144.0706445271196, 156.78088262014197, 165.11318825
328644, 166.01721374544474, 159.25543960527736, 147.07668179180928, 134.8871294885529, 127.46490224389106,
127.94160522263513, 135.78128664918935, 148.35525703098423, 160.1017194556203, 166.30988801432844, 164.7534
1438602845, 155.92033415644977, 143.4892606169772, 132.33044393070537, 126.80206542948662, 129.622727391181
23, 139.2793119125154, 151.64308421994335, 162.3784115242412, 166.67404163516466, 162.8317881959979, 152.20
7908249074, 139.25855244632533, 129.42956483274477, 126.80040861497866, 132.10346872976922, 143.56384637155
597]
```

In [164…

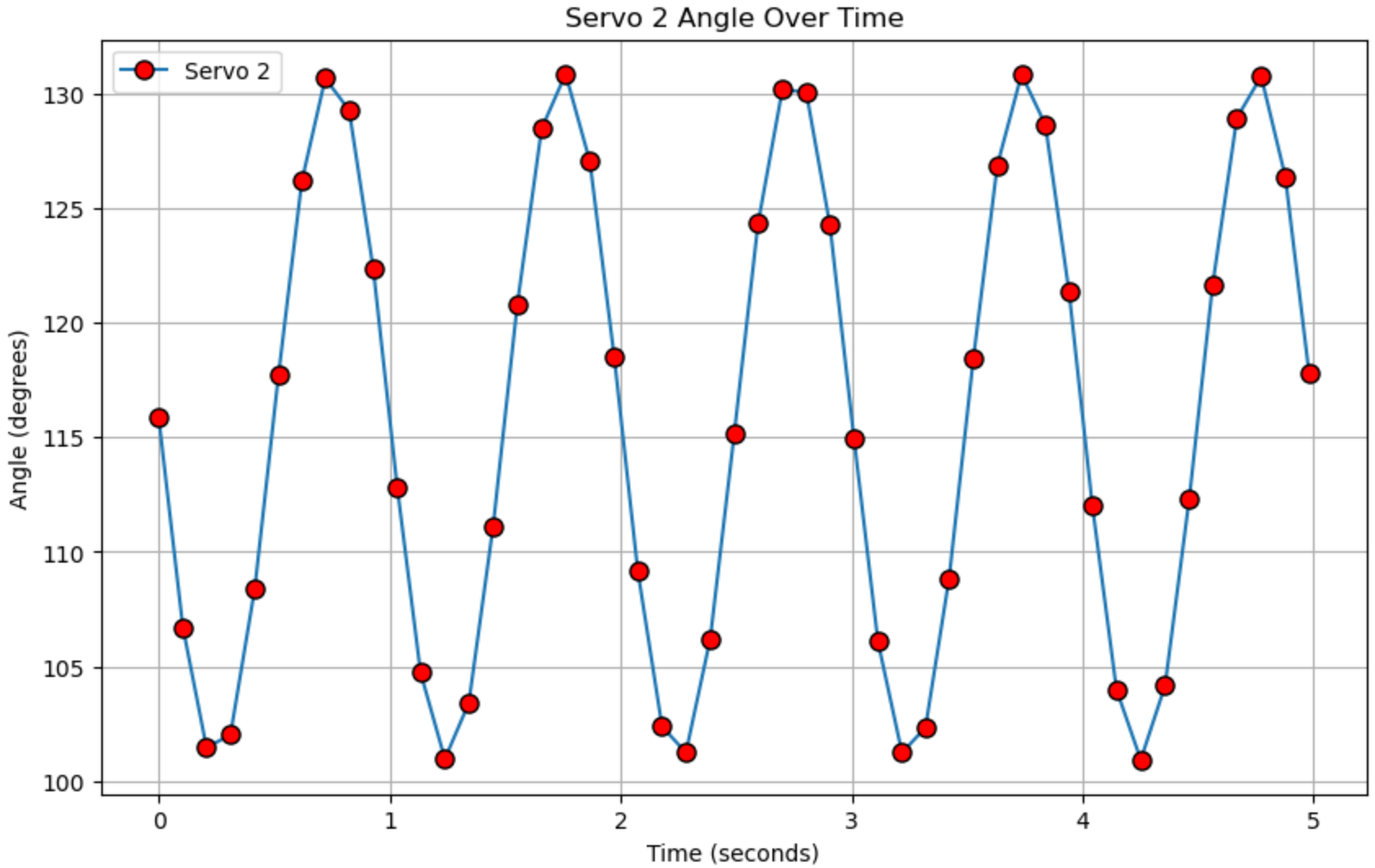
```python
# graph servo 2 angles
start_time = time.time()
duration = 5.0

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 + math.pi)
    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
Angle (degrees)
130
125
120
115
110
105
100
0
1
2
3
4
5
Time (seconds)

```
Servo 2's angles are:
[115.90548410984907, 106.70964114475105, 101.44912807544452, 102.01585131874295, 108.38830913937208, 117.75
558028932028, 126.1931608822675, 130.68037912020472, 129.28783890424617, 122.34019138002883, 112.8029320824
3368, 104.71921337116297, 100.95422829982783, 103.40242767735762, 111.10139412831856, 120.82616358717392, 1
28.48112736129227, 130.87825854112168, 127.04991707853728, 118.54396288415043, 109.17143484144158, 102.3742
2939659312, 101.23340145939211, 106.18946203298708, 115.16387630796433, 124.36084015922167, 130.18534910122
06, 130.08220745260456, 124.2884588456239, 114.92970778313558, 106.07817546706843, 101.2237975990784, 102.3
3191336916862, 108.8371020970228, 118.43327059388312, 126.87578668830747, 130.85695652540963, 128.652591180
0395, 121.3589695864986, 112.05906878024834, 103.98333088320577, 100.9206616572563, 104.15590181971963, 11
2.33049160217719, 121.66338609295927, 128.95413583552477, 130.7681554284925, 126.39321497435593, 117.775315
53400162]
```

In [165…

```python
# 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
Angle (degrees)
160
155
150
145
140
135
130
125
120
0
1
2
3
4
5
Time (seconds)

```
Servo 3's angles are:
[141.86348907541458, 153.96685712217823, 161.0706051032415, 160.39870789645235, 151.92820910416037, 139.220
42653433724, 127.61308269647785, 122.010816112046, 124.47596985916502, 133.6643762127289, 146.5745050018722
7, 157.4961817950018, 161.83138324784312, 157.99178819599786, 147.58072163447778, 134.6269511235575, 124.70
332094779756, 121.96301250814041, 127.32113886929125, 138.80753818621656, 151.55985921024006, 160.088690437
79708, 161.2868695251712, 154.3361137321652, 142.52398607768106, 130.14792450844763, 122.71124957611536, 12
3.14992484880241, 131.4442788921256, 144.07552968143798, 155.7938589953713, 161.64685026542372, 159.1859829
8841778, 149.94386761061935, 137.04276083497012, 126.33484239645509, 121.85485822690997, 125.4296724689574
8, 135.88679916713477, 148.5946352572944, 158.6696266628191, 161.76064891541716, 156.61960367206873, 145.71
679674497523, 132.8718937039581, 123.79374705251863, 122.26505138669273, 128.68091025450545, 140.5307614920
3542]
```

In [166…

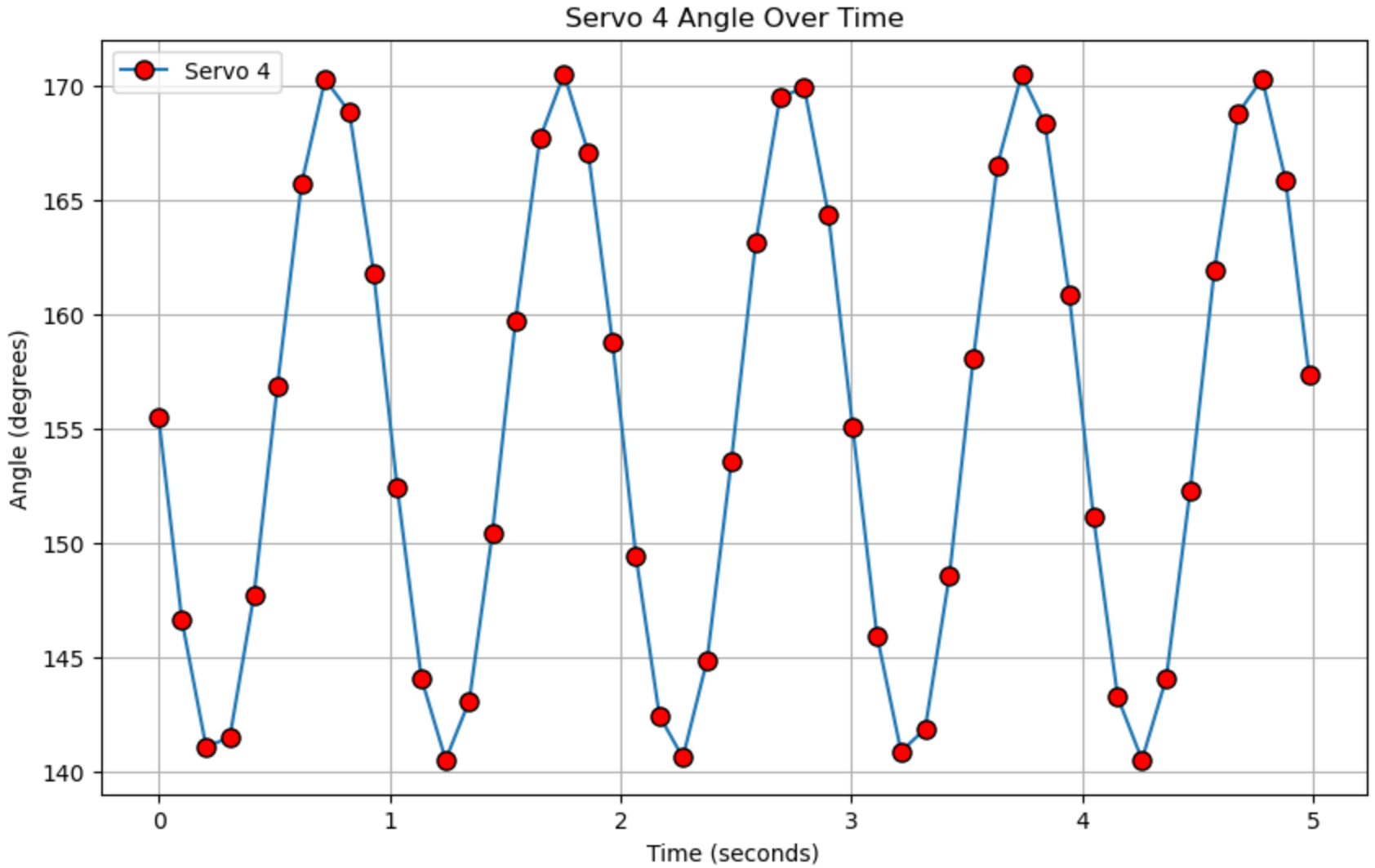
```python
# graph servo 4 angles
start_time = time.time()
duration = 5.0

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 + math.pi)
    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
Angle (degrees)
170
165
160
155
150
145
140
0
1
2
3
4
5
Time (seconds)

```
Servo 4's angles are:
[155.50521446491732, 146.62010466245962, 141.09371153094915, 141.5187694057603, 147.7388408329921, 156.8514
3800896316, 165.68225029323207, 170.27027059295582, 168.84214074754684, 161.81565780731356, 152.42847743668
923, 144.07618219732396, 140.5348657047571, 143.10239913649082, 150.43306938448578, 159.73604416724956, 16
7.67818731025034, 170.51113612152048, 167.08144240885866, 158.80465499845846, 149.4175599722252, 142.454785
17406443, 140.63254857038527, 144.8855497967472, 153.6061224641286, 163.13133760297748, 169.4582620809108,
169.92913344862416, 164.34442310144115, 155.05026523284837, 145.96178191506942, 140.89954640032883, 141.879
71181946855, 148.57301504279351, 158.06698054070955, 166.50498013224546, 170.46068648506025, 168.3351944811
8759, 160.862679614437, 151.14438233366678, 143.26382753242603, 140.53567555953612, 144.10452935556054, 15
2.279560844371, 161.94230335006898, 168.7730820595691, 170.29705060740883, 165.84361141071582, 157.32919469
79916]
```

In [167…

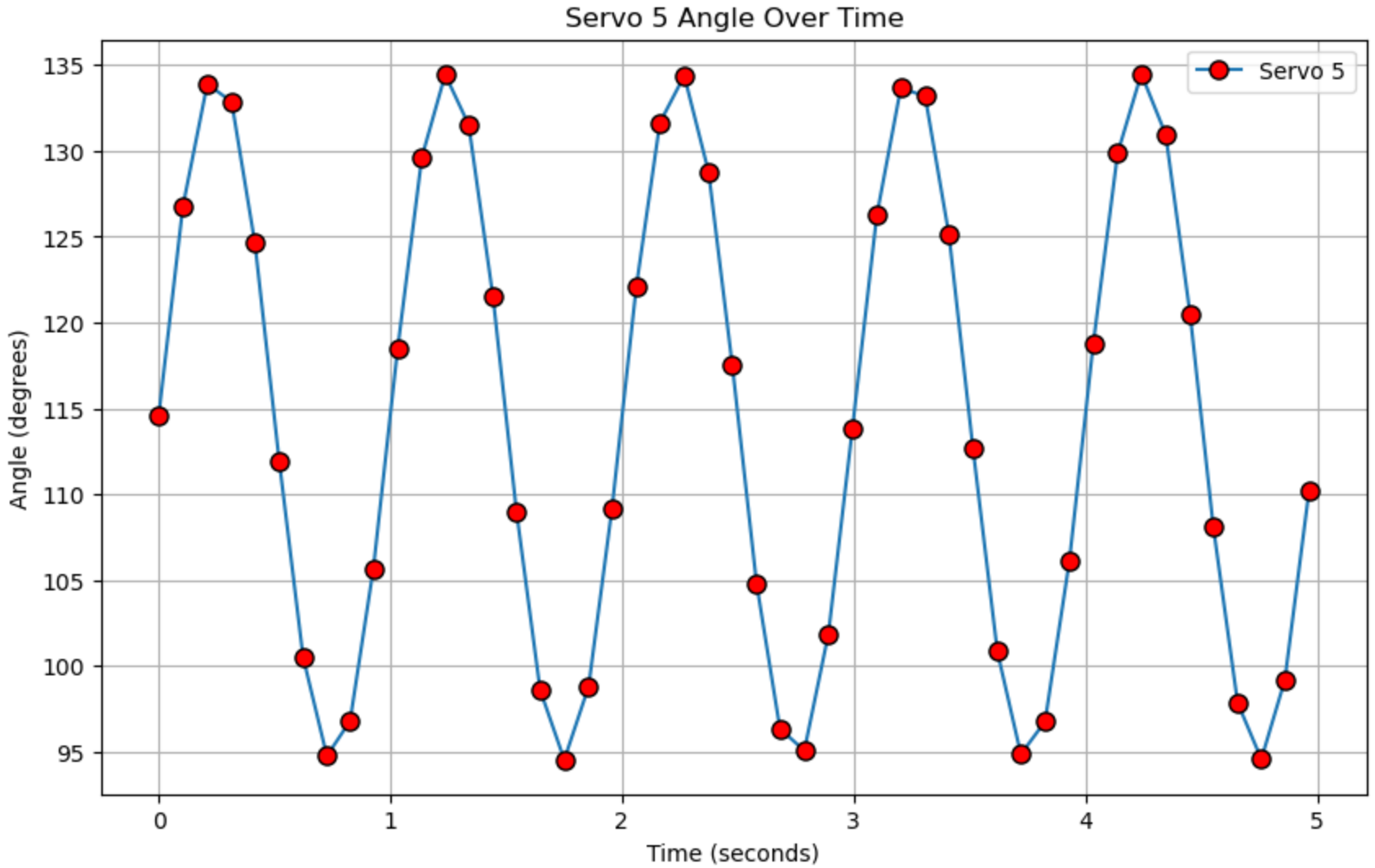
```python
# graph servo 5 angles
start_time = time.time()
duration = 5.0

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
Angle (degrees)
135
130
125
120
115
110
105
100
95
0
1
2
3
4
5
Time (seconds)

```
Servo 5's angles are:
[114.52668120526046, 126.7868766101357, 133.89612711833846, 132.86454310653644, 124.6237010910961, 111.9160
2113310475, 100.4925984148663, 94.7408304015749, 96.78519249253233, 105.65122310857558, 118.50927549196943,
129.6441592366262, 134.4531251880415, 131.51887767693563, 121.48570563006912, 109.00513644141378, 98.589158
67187606, 94.52029131805213, 98.7884903684159, 109.1917511660996, 122.10582909531915, 131.6435193594852, 13
4.38266272911747, 128.77390784075706, 117.5399344120065, 104.78035160978979, 96.32951047717157, 95.05374998
458518, 101.85644463179462, 113.84457769321827, 126.2463230602379, 133.65975444254443, 133.19630441662898,
125.11637741396262, 112.64384586963192, 100.82566164800227, 94.84162087387335, 96.74953755960036, 106.07347
62215271, 118.78492868201275, 129.87284433585765, 134.49042901712892, 130.95971293529004, 120.5198337076054
3, 108.11565254697202, 97.84170003281042, 94.55475379384956, 99.15629337036577, 110.23835889791619]
```

In [168…

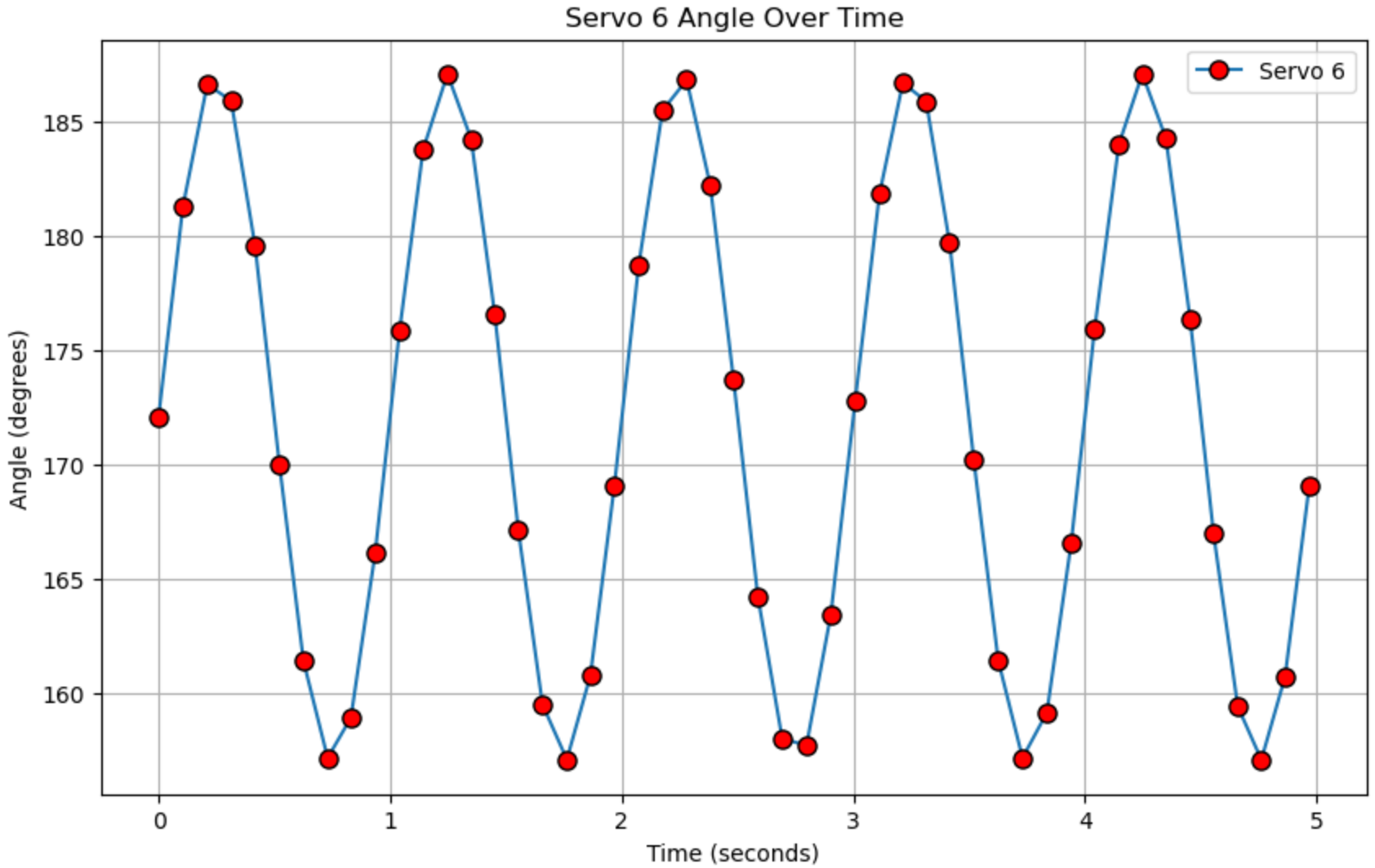
```python
# graph servo 6 angles
start_time = time.time()
duration = 5.0

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 + math.pi)
    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
Angle (degrees)
185
180
175
170
165
160
0
1
2
3
4
5
Time (seconds)

```
Servo 6's angles are:
[172.10289735081733, 181.28379526102339, 186.6141257041968, 185.90727019016558, 179.54347654815788, 170.032
9484421025, 161.4321674701644, 157.19672695430967, 158.95401578610395, 166.16431646474786, 175.859706771235
95, 183.77176965231, 187.0778763523532, 184.22743936791483, 176.56819144849305, 167.1461347932307, 159.5331
2620267224, 157.1283026156131, 160.7912636483531, 169.05174340838556, 178.69913740194835, 185.4743209303347
6, 186.8119757858065, 182.21486549543204, 173.74240020761002, 164.25088810472803, 158.0563898724858, 157.73
793171816732, 163.4440529428594, 172.7781059727145, 181.81877808098648, 186.68648612365868, 185.87287974828
885, 179.710033998957, 170.19195569707736, 161.46574255576934, 157.19669058548433, 159.17769902561065, 166.
5777602122585, 175.91549900993024, 183.98978243146652, 187.07785702549296, 184.26156951657265, 176.33450027
670943, 166.98668598037375, 159.4506584346856, 157.1180188922071, 160.7334848353226, 169.0510831791186]
```

In [169…

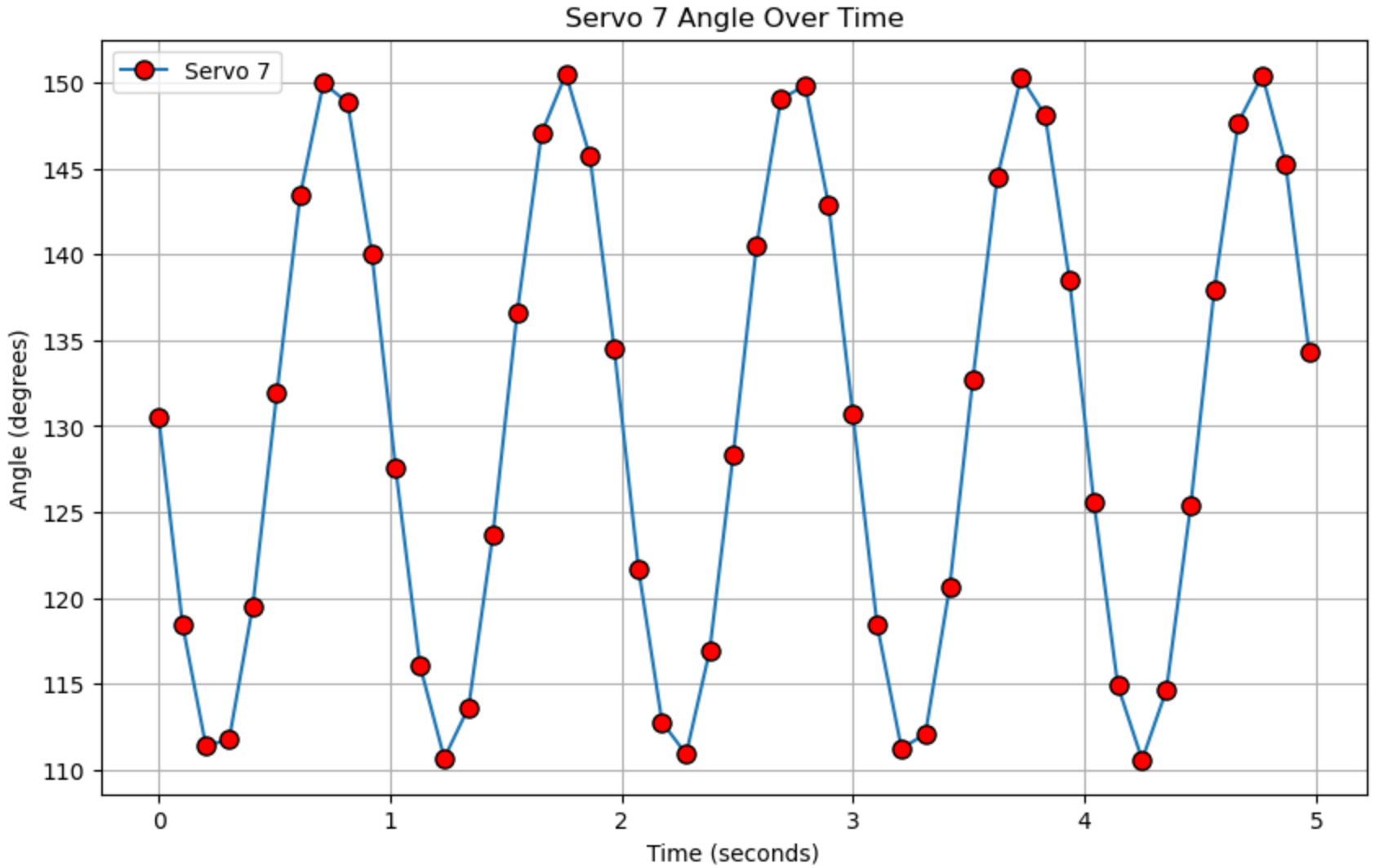
```
# graph servo 7 angles
start_time = time.time()
duration = 5.0

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
Angle (degrees)
150
145
140
135
130
125
120
115
110
0
1
2
3
4
5
Time (seconds)

```
Servo 7's angles are:
[130.53651092458543, 118.4212577223062, 111.386706092124, 111.72727231002905, 119.52633971173952, 131.89730
982809462, 143.42314605737474, 149.99188724897354, 148.84996970384893, 140.04619834906097, 127.545781803306
6, 116.05732423819522, 110.65927040962382, 113.61778277178983, 123.68978783852808, 136.6497955690899, 147.0
5107413804708, 150.5254612610407, 145.70797275912122, 134.5112193676992, 121.6834363464109, 112.75135277605
821, 110.88772857823771, 116.89070533442896, 128.3704454769304, 140.50519412912033, 149.0565318918056, 149.
84663440522036, 142.9225338568162, 130.68451529238087, 118.39241862844847, 111.21425412013227, 112.06457378
02094, 120.61568967420433, 132.721707638601, 144.4601882961758, 150.32641772834546, 148.10143012363437, 13
8.52325192660876, 125.60031159548633, 114.86877517101514, 110.56073859600487, 114.6159994985137, 125.369864
41644173, 137.98019556947622, 147.68474217169634, 150.43142859662652, 145.29377884424568, 134.3175107244440
2]
```

In [170…

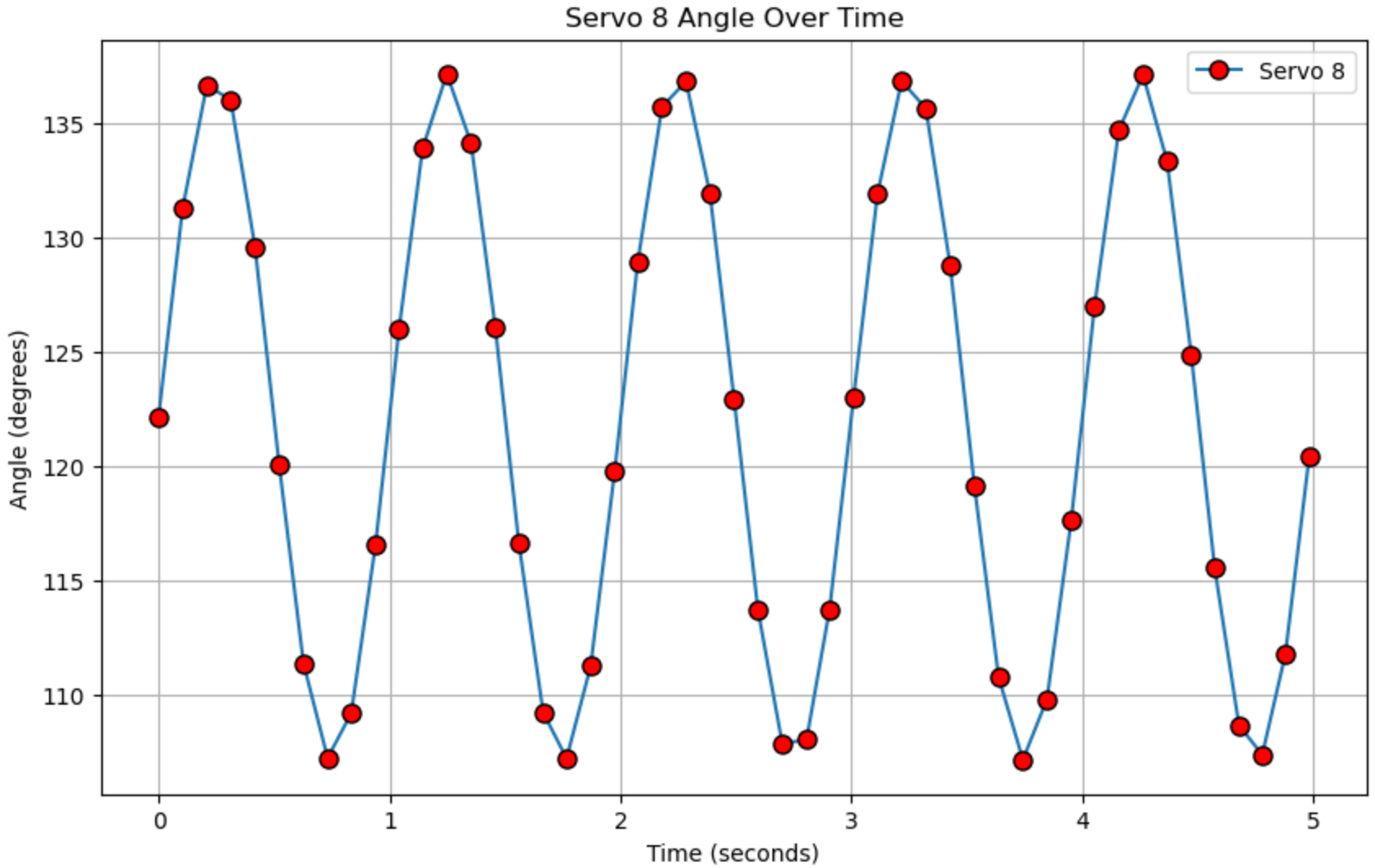
```python
# graph servo 8 angles
start_time = time.time()
duration = 5.0

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 + math.pi)
    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
Angle (degrees)
135
130
125
120
115
110
0
1
2
3
4
5
Time (seconds)

```
Servo 8's angles are:
[122.17638093416151, 131.27005596523765, 136.66343795702332, 136.02385301318446, 129.60013330539596, 120.05
068258712399, 111.38705412579259, 107.25610829821807, 109.21256458906035, 116.5780805491975, 126.0180867022
1308, 133.8936301241301, 137.1587976957955, 134.1233974135785, 126.06698727245832, 116.6285901586277, 109.2
4057479857748, 107.23972131819252, 111.26354707761753, 119.76479377391132, 128.93421948646258, 135.71857096
244952, 136.82722514052597, 131.91625012437402, 122.96730904938974, 113.7177667631685, 107.88836400938459,
108.05453267489972, 113.75809752008271, 122.97314282992807, 131.89891480354035, 136.83698135307046, 135.653
79725542442, 128.80525786523407, 119.16425623249064, 110.78173972525833, 107.17858225103507, 109.8218391415
9792, 117.6234634431425, 127.00039033758301, 134.68950711328165, 137.11574940933718, 133.3581407992628, 12
4.88485235347747, 115.55415410583682, 108.68292006401586, 107.39697590666168, 111.78987629757845, 120.41135
95997563]
```