Name: Andrew Hayes
Student ID: 21321503
E-mail: a.hayes18@universityofgalway.ie

CT420   2025−01−28

Assignment 1: NTP Benchmarking

1 NTP Installation

As I already use a Linux-based operating system on my personal laptop, I first attempted to run `ntpq` without installing anything, assuming it would be installed; to my surprise, Arch Linux is so minimalist that it doesn't even come with the `ntpd` package by default and I had to install it myself! That explains why my system clock has always been two minutes behind for the past few years! After installing `ntpd` and enabling the daemon, and watching my system clock slowly speed up until it matched UTC, I checked that it was working properly by running `ntpq -p` a few times:


```
[andrew-hayes@arch] ~
% sudo ntpq -p                                                          ✓
     remote           refid       st t when poll reach   delay   offset  jitter
==============================================================================
 082-087-143-149 193.79.237.14    2 u   58   64     3    36.483  -1.727   2.164
 ntp1-cwt.heanet .GNSS.           1 u   56   64     3    22.120  +3.046   0.035
 t1.time.ir2.yah 31.60.135.175    2 u   55   64     3    20.622  +2.031   0.899
 gowest.hojmark. 193.67.79.202    2 u   55   64     3    37.875  +2.072   1.472
[andrew-hayes@arch] ~
% sudo ntpq -p                                                          ✓
     remote           refid       st t when poll reach   delay   offset  jitter
==============================================================================
 082-087-143-149 193.79.237.14    2 u   61   64     3    36.483  -1.727   2.164
 ntp1-cwt.heanet .GNSS.           1 u   59   64     3    22.120  +3.046   0.035
 t1.time.ir2.yah 31.60.135.175    2 u   58   64     3    20.622  +2.031   0.899
 gowest.hojmark. 193.67.79.202    2 u   58   64     3    37.875  +2.072   1.472
[andrew-hayes@arch] ~
% sudo ntpq -p                                                          ✓
     remote           refid       st t when poll reach   delay   offset  jitter
==============================================================================
 082-087-143-149 193.79.237.14    2 u   64   64     3    36.483  -1.727   2.164
 ntp1-cwt.heanet .GNSS.           1 u   62   64     3    22.120  +3.046   0.035
 t1.time.ir2.yah 31.60.135.175    2 u   61   64     3    20.622  +2.031   0.899
 gowest.hojmark. 193.67.79.202    2 u   61   64     3    37.875  +2.072   1.472
[andrew-hayes@arch] ~
% []                                                                    ✓
```

Figure 1: Verifying that the NTP daemon is running, via `ntpq`

2 NTP Configuration