CentipedeManager.h

```
const uint8 t N CP PORTS = 8
typedef CP_Masks:
  std::array<uint16 t, N CP PORTS>
<struct> CP Address
 + uint8_t port
 + uint8 t bit
CentipedeManager
 - Centipede cp
```

```
- CP Masks masks
```

- + CentipedeManager()
- + begin()
- + clear masks()
- + add to masks(CP Address)
- + set masks(CP Masks)
- + get masks(): CP Masks
- + all masks are zero(): bool
- + report masks(Stream &)
- + send masks()

constants.h

```
const int8 t PCS X MIN
                              = -7
const int8 t PCS X MAX
                              = 7
const int8 t PCS Y MIN
                              = -7
const int8 t PCS Y MAX
                              = 7
const uint8 t NUMEL PCS AXIS =
    PCS X MAX - PCS X MIN
                             (= 15)
const uint8 t NUMEL LED AXIS = 16
const uint8 t N VALVES
                              = 112
const uint16 t N LEDS
    NUMEL LED AXIS * NUMEL LED AXIS
                              (= 256)
const uint8 t P2VALVE[][]
const uint8 t P2LED[][]
const uint8 t VALVE2CP PORT[]
const uint8 t VALVE2CP BIT[]
```

translations.h

```
int8 t VALVE2P[][]
p2valve(P): uint8 t
p2led(P): uint8 t
valve2p(uint8 t): P
init valve2p()
valve2cp(uint8 t): CP_Address
```

The most essential data structures used in the C++ code.

Dennis van Gils. 02-12-2022

ProtocolManager.h

```
const uint16 t PROTOCOL MAX LINES = 5000
                                            (← make as large as free RAM allows)
const uint16 t MAX POINTS PER LINE = NUMEL PCS AXIS * NUMEL PCS AXIS (= 225)
const int8 t P NULL VAL
                                  = -128
typedef PointsArray: std::array<P, MAX POINTS PER LINE + 1>
typedef Program : std::array<PackedLine, PROTOCOL MAX LINES>
                                                   ProtocolManager
("Point in the Protocol Coordinate System")
 + int8 t x
 + int8 t y
```

+ P(int8 t = P NULL VAL, int8 t = P NULL VAL)

Line

+ uint16 t duration + PointsArray points

+ set(int8 t, int8 t)

+ pack into byte(): uint8 t

+ unpack byte(uint8 t)

+ set null()

+ print()

+ is null(): bool

- + Line()
- + Line(uint16 t, PointsArray) + pack into(PackedLine &)
- + print()

PackedLine

```
duration
+ uint16 t
```

- + std::array<uint16 t, NUMEL PCS AXIS> masks
- + PackedLine()
- + unpack into(Line &)

```
- CentipedeManager * cp mgr
- Program _program
- char[64] __name
- uint16 t N lines
- uint16 t pos
- uint32 t tick
          _last_activated line
- Line
          line buffer
- Line
+ ProtocolManager(CentipedeManager *)
+ clear()
+ add line(Line): bool
```

- + add line(uint16 t, PointsArray): bool
- + goto line(uint16 t)
- + activate line()
- + update()