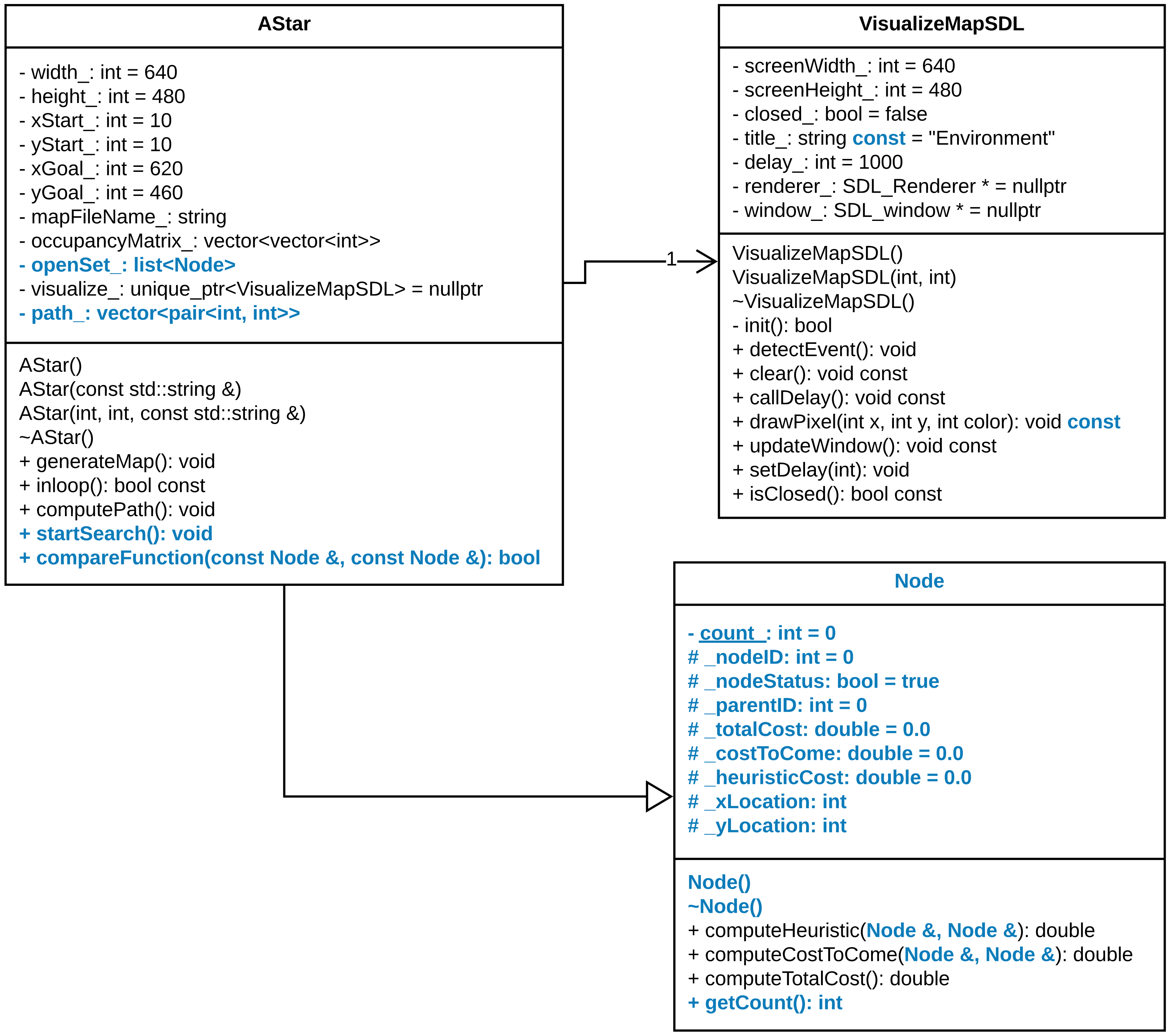
Ashish R Patel UID:115730625

CLASS DIAGRAM

MIDTERM PROJECT



```
AStar
- width_: int = 640
- height_: int = 480
- xStart_: int = 10
- yStart_: int = 10
- xGoal_: int = 620
- yGoal_: int = 460
- mapFileName_: string
- occupancyMatrix_: vector<vector<int>>
- openSet_: list<Node>
- visualize_: unique_ptr<VisualizeMapSDL> = nullptr
- path_: vector<pair<int, int>>

AStar()
AStar(const std::string &)
AStar(int, int, const std::string &)
~AStar()
+ generateMap(): void
+ inloop(): bool const
+ computePath(): void
+ startSearch(): void
+ compareFunction(const Node &, const Node &): bool
```

```
VisualizeMapSDL
- screenWidth_: int = 640
- screenHeight_: int = 480
- closed_: bool = false
- title_: string const = "Environment"
- delay_: int = 1000
- renderer_: SDL_Renderer * = nullptr
- window_: SDL_window * = nullptr

VisualizeMapSDL()
VisualizeMapSDL(int, int)
~VisualizeMapSDL()
- init(): bool
+ detectEvent(): void
+ clear(): void const
+ callDelay(): void const
+ drawPixel(int x, int y, int color): void const
+ updateWindow(): void const
+ setDelay(int): void
+ isClosed(): bool const
```

```
Node
- count_: int = 0
# _nodeID: int = 0
# _nodeStatus: bool = true
# _parentID: int = 0
# _totalCost: double = 0.0
# _costToCome: double = 0.0
# _heuristicCost: double = 0.0
# _xLocation: int
# _yLocation: int

Node()
~Node()
+ computeHeuristic(Node &, Node &): double
+ computeCostToCome(Node &, Node &): double
+ computeTotalCost(): double
+ getCount(): int
```