+ Hcost + Gcost

+ Fcost + Coordinate

+ ParentNode

+ ToString()

+ PrintChain() + GetPath()

+ PathNode(startingPosition)

- GetPath(list<pathCoords>)

+ PathNode(coordinate, gScore, fScore, parent)

EnemyData

+ operation1(params):returnType

+ MaxHealth + Value

+ Description

operation3()

operation2(params)

+ Name + Speed

Tower Defense V0.3.X <<interface>> **IDisplayable** + GetDisplayText() Game Manager + Instance + Enemy Spawner + Map Manger + Path Finder Almost everything + GUI Controller calls Game + Build Manager Tower Manager so the + TowerGUI + Lives TowerData arrows are + Gold - TimeSinceLastShot excluded for the ——Contains— - RadiusIndicator sake of readability - List<Enemy> enemiesInRange - On Enable() - Target - Turret - On Disable() - On Scene Loaded() - TargetMode - InitializeGame() - HandleEnemyReachedGate(enemy) - HandleEnemyDied(enemy) - Start() Projectile + Can Afford (price) - OnEnable() **Build Menu Button** + Spend Gold(price) - OnDisable() + Target + GainGold(amount) Update() + Damage - GUIController + Pause Game() ShootLogic() + Speed - StructureData + Resume Game() FaceTarget() + LastTargetPosition Tile Data TurretTracking() **Tile Data Class** TargetFinder() # DealDamage(enemy) + OnPointerClick() + name SelectTargetMode() Diagram # MoveTowardsTarget() + SetStructureData(StructureData) + description GUI Controller Enemy Spawner FindTarget() # OnTriggerEnter2D() + GetDisplayText() FindClosestEnemy() + icon + Initialize(target, damage, speed) gameManager enemy prefab + layer FindFurthestEnemy() + tilebase - pathFinder - FindLowestHealthEnemy() - buildManager list<enemy> enemyPool - FindHighestHealthEnemy() mapManager - FindRandomEnemy() + tostring() \_contains\_\_\_ towerGUI - Distance(start, finish) - Start() Tooltip - OnMouseEnter() - PerioticSpawner() - toolTip OnMouseExit() Normal Projectile Splash Projectile + SpawnEnemies() tooltipText - selectedIcon HandleEnemyDied(enemy) + SpawnOneEnemy() - tooltipBackground - selectedDetails + GetDisplayText() - SplashRadius alreadyHit + SpawnRandomEnemyType(pos) canvasRect livesLabel + EnemyEnteredRange(Enemy) - ExplodeDuration targetDead + SpawnEnemy(pos, prefab) - tooltipTransform - goldLabel + EnemyLeftRange(Enemy) - triggered + StartSpawning() gameOverLabel - circleCollider + StopSpawning() Structure Data Platform Data Ground Data - Update() btnExitEditMode - Start() - particle - OnEnable() txtPathRecalculating - Update() It's purpose is for + layer = structure layer + tileBase + tilebase - OnDisable() txtTileInfo - Trackmouse() polymorphism <sup>1</sup> + walk cost + walk cost - HandleEnemyDied() + cost - Start() - pnlStructureInfo + ShowToolTip() + layer = ground layer + layer = platform layer # MoveTowardsTarget() - Update() + HideToolTip() + isSolid - ApplySplashDamae() # DealDamage() scrollViewContentsBox + SetCurrentString(data) # OnTriggerEnter2D() # MoveTowardsTarget() + tostring() list<StructureData> # DealDamage() + tostring() structureBuildBtnPrefab # OnTriggerEnter2D() floatingTextGO TowerGUI + Initialize() lastHoveredGameObject - buildManager **Tower Data** Wall Data **Build Manager** - Update() TileData class inherits scriptable object class targetIcon We give the tower - OnEnable() https://unity.com/how-to/architect-game-code-scriptable-objects btnTargetFurthest a tilebase in order + tilebase - OnDisable() to represent the + tower prefab + cost - mapManager - PopulateScrollView() btnTargetHighest tower game + damage - guiController - HandleToolTipLogic() btnTargetLowest object on the + range lastHoveredPosition - btnTargetRandom - HandlePathRecalculated() + tostring() tilemap as well + reload time instantiatedTowers[] txtTargetDescription - HandlePathRecalculating(path, index) (for pathfinding Range Collider + cost currentBuildMode - HandleHoveredNewTile(tileCoords) pnlTarget and hover logic) + projectile prefab - currentlySelectedStructure - HandleHoveredNewGameObject(gameObject) - btnSellStructure + Parent - radiusIndicator - HandleUnhoveredGameObject() List<Button> towerTargetButtons tileMapOffset - HandleMouseUp() + tostring() targettedTower + enum build modes - HandleEnemyHit(enemy, damage) Start() + Exit Game() - OnTriggerEnter2D() + RestartScene() OnTriggerExit2D() - Start() + TargetTower(tower) + EnterBuildMode(StructureData) - OnEnable() + SellTower() + Enter Demolish Mode() OnDisable() + UnighlightTowerButtons() + Exit Edit Mode() PauseHighlighting() + TargetNearest() + ShowToolTip() AttemptBuildStructure(structure, pos) + TargetFurthest() + HideToolTip() HoverTile(position) + TargetMinHP() + UpdateGameVariableDisplay(lives, gold) BuildModeHoverLogic(position) + TargetMaxHP() + ShowGameOverPanel() DemolishModeHoverLogic(pos) + TargetRandom() + HideGameOverPanel() ShowRadiusIndicator(towerData) + ClearTarget() + TogglePathVisual() UnhoverTile(position) + ShowTargetPanel() + SpawnFloatingText(pos, message, color, size) ChangeTowerTint(position, color) + HideTargetPanel() InstantiateTower(TowerData, postion) HandleMouseUp() + DemolishStructure(position) + EnterBuildMode(StructureData) + EnterDemolishMode() + ExitBuildMode() Enemy gameManager pathFinder - mapManager Pathfinder Map Manager healthBarForeground Icon - mapManager - groundLayer - structureLayer decoreLayer currentPath - entrance structureLayer currentPathInder - exit platformLayer onMainPath exitCoordinate list<TileData> tileDatas routeToMainPath - entranceCoordinate - dictionary<TileBase, TileData> subPathIndex + PathRecalculated() highlightedTiles[] tilemap offset + PathCoordinates[] Highlighted Tile + StructureChanged() currentWalkSpeed + OnPathRecalculated + enum Layer + OnPathRecalculating + Position + OnEnemyReachedGate + CurrentPath + Layer + OnEnemyDied - Awake() + PreviousPath + Color + OnEnemyHit + PreviousColor = white - GetLayer(Layer) - Start() + CurrentHealth + ContainsTileAt(Layer, position) - OnEnable() + HighlightedTile(position, layer, color, previousColor) + EnemyData + SetTile(Position, TileData) - OnDisable() + RemoveTile(Layer, position) CalculateShortestPath() + HighlightTile(Layer, position, color) Start() IsValidTile(position) + ReverseHighlight(Layer, position) - OnEnable() - ManhattanDistance(start, finish) + UnhighlightTile(Layer, position) OnDisable() - HandleStructureChanged(bool demolish) + UnHighlightAll() Update() + RouteToPath(startingPos) + GetTileData(Layer, position) FaceNextNode() + PathBlocked(path) + GetTileCost(position) HandlePathRecalculated(newPath, index) + PointOnPath(position) + HighlightPath(path[], color HandleStructureChanged(demolish?) + HighlightPath() + IsGroundSolid(position) + Spawn(position, maxHealth) + UnhighlightPath() + Despawn() + TakeDamage() + GetDisplayText() - Path Node