

Entities & Responsibilities				
Entity Name	Purpose / Role	Parent (Contained By)	Holds (Arrays+counter)	Key Behaviors
City Housing	Top-level coordinator for all societies	—	HosuingSociety[] societies; int totalSocieties;	add/remove society, book/cancel plot, display details
Housing Society	Holds multiple blocks within one named society	City Housing	Block[] blocks; int totalBlocks;	addblock, findblock, book/cancel plot, display details
Block	Contains streets, plots, and amenities	Housing Society	Plot[][] plots; Park[] parks;	findplot, book/cancel plot, display details
Plot	Base class for all plots	Block	—	calculateareas
Corner Plot	Specialized version of Plot with corner premium	Plot	—	Calarea, applypremium
Park	Amenity inside a block	Block	—	Calc_area
Commercial Market	Holds multiple shop units	Block	Shop[] shops; int totalShops;	displayMarket
Shop	Individual commercial unit	Commercial Area	—	Displayshopdetails

Attributes per Entity	Layout & Preload Rules	Area Formulas Constraints & Output Notes:
<b>PlotType →</b> long: price, String: currency, enum values <b>Plot →</b> String: ID, PlotType: type, boolean: availability, String: shape, double: area, double: price, double: width1, width2, depth1, depth2, front, back <b>CornerPlot →</b> double: premiumRate <b>Shop →</b> String: ID, PlotType: type, double: price, boolean: availability <b>CommercialMarket →</b> Shop[]: shops, int: totalShops <b>Park →</b> String: shape, double: width, length, area <b>Block →</b> String: name, int: streets, Plot[][]: plots, Park[]: parks, CommercialMarket: market <b>HousingSociety →</b> Block[]: blocks, int: totalBlocks, String: name <b>CityHousing →</b> HousingSociety[]: societies, int: totalSocieties	<ul style="list-style-type: none"> <li><b>City:</b> Lahore</li> <li><b>Societies:</b> LDA Avenue 1, LDA Avenue 2</li> <li><b>Blocks per society:</b> A, B, C</li> <li><b>Streets per block:</b> 5 (rows) with jagged lengths: 10, 11, 12, 13, 14</li> </ul> <p><b>Street → PlotType Mapping:</b></p> <p>1 → RES_5_MARLA (RECTANGLE)  2 → RES_10_MARLA (RECTANGLE)  3 → RES_1_KANAL (TRAPEZOID)  4 → COMM_SHOP (RECTANGLE)  5 → COMM_OFFICE (RECTANGLE)</p> <p><b>Special Rules / Sprinkle Rules:</b></p> <ul style="list-style-type: none"> <li>Every 5th plot on any street → PARKING</li> <li>Every 4th plot on streets 1–3 → corner plot (+8% premium)</li> </ul>	<b>RECTANGLE</b> area = width × depth <b>TRAPEZOID</b> ((front + back) / 2) × depth <b>L-SHAPE</b> (w1 × d1) + (w2 × d2) <p><b>Constraints:</b></p> <ul style="list-style-type: none"> <li>Arrays only; no ArrayList/Vector.</li> <li>Two-pass filtering for multi-result queries: count → allocate → fill.</li> <li>Plot IDs: street-plot format (e.g., 1-001).</li> </ul> <p><b>Output / Display:</b></p> <ul style="list-style-type: none"> <li>Short summaries: total/available plots, block summaries.</li> <li>Street layouts: A = Available, X = Occupied.</li> <li>Layout per street for quick overview.</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>Parking and corner plot rules applied automatically.</li> </ul>