

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