TEST CASES

1. **defineService** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
1	Valid service definition with daily inspection	serviceName = "Food", inspectionFrequency = 1	Service "Food" defined with daily inspection	None	Functionality Check
2	Attempt to define a service with negative inspection frequency	serviceName = "Shelter Cleaning", inspectionFrequency = -2	Method returns **false** (failure)	None	Input Validation

2. **defineShelter** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
3	Valid shelter definition with maximum capacity	name = "City Shelter", location = Point(0, 0), maxCapacity = Integer.MAX_VALUE, staffInCharge = "John Doe"	Shelter "City Shelter" defined with maximum capacity	None	Functionality Check
4	Attempt to define a shelter with negative capacity	name = "Invalid Shelter", location = Point(10, 10), maxCapacity = -50, staffInCharge = "Jane Doe"	Method returns **false** (failure)	None	Input Validation

3. **serviceForShelter** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
5	Valid association of a service with a shelter	shelterName = "City Shelter", serviceName = "Food"	Service "Food" associated with shelter "City Shelter"	None	Functionality Check
6	Attempt to associate a service with a	shelterName = "Non-existent Shelter",	Method returns **false** (failure)	None	Input Validation

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
	non-existing shelter	serviceName = "Medical Care"			

4. **declareShelterOccupancy** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
7	Valid recording of shelter occupancy	name = "City Shelter", date = "2023-12-01", occupancy = 150	Shelter occupancy recorded for the specified date	None	Functionality Check
8	Attempt to record negative occupancy	name = "City Shelter", date = "2023-12-02", occupancy = -10	Method returns **false** (failure)	None	Input Validation

5. **addStaff** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
9	Valid addition of a staff member	name = "New Staff", services = {"Food", "Medical Care"}, volunteer = true, manager = "Supervisor"	Staff member "New Staff" added successfully	None	Functionality Check
10	Attempt to add a staff member with an empty name	name = "", services = {"Shelter Cleaning"}, volunteer = false, manager = "Coordinator"	Method returns **false** (failure)	None	Input Validation

6. **defineDonor** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
11	Valid donor definition	name = "Good Samaritan", centralOffice = Point(5, 5), contact = "contact@example.com", fundingPrograms = {"Philanthropy", "Community Support"}	Donor "Good Samaritan" defined successfully	None	Functionality Check
12	Attempt to define a donor with an empty name	name = "", centralOffice = Point(10, 10), contact = "invalid@example.com", fundingPrograms = {"Emergency Relief"}	Method returns **false** (failure)	None	Input Validation

7. **receiveDonation** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
13	Valid recording of a donation	donor = "Good Samaritan", fundingProgram = "Philanthropy", date = "2023-12-01", donation = 500	Donation recorded successfully for the specified donor and program	None	Functionality Check
14	Attempt to record a negative donation amount	donor = "Invalid Donor", fundingProgram = "Community Support", date = "2023-12-02", donation = -100	Method returns **false** (failure)	None	Input Validation

8. **disburseFunds** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
15	Valid disbursement of funds	shelterReceiving = "City Shelter", date = "2023-12-01", funds = 300	Funds disbursed successfully to the specified shelter	None	Functionality Check

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
16	Attempt to disburse negative funds	shelterReceiving = "City Shelter", date = "2023-12-02", funds = -50	Method returns **false** (failure)	None	Input Validation

9. **shelterAtCapacity** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
17	Shelters operating at or above 80% of capacity	threshold = 80	Set of shelter names operating at or above 80% of capacity	None	Functionality Check
18	Threshold value outside the valid range (less than 0)	threshold = -10	Method returns an empty set (no shelters considered)	None	Input Validation

10. **occupancyVariance** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
19	Shelters with occupancy variance of 20% or more during Dec 2023	startDate = "2023-12-01", endDate = "2023-12-31", threshold = 20	Set of shelter names with variance >= 20% during the specified period	None	Functionality Check
20	Threshold value outside the valid range (greater than 100)	startDate = "2023-12-01", endDate = "2023-12-31", threshold = 110	Method returns an empty set (no shelters considered)	None	Input Validation

11. **donorReport** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
21	Generating a report for donors active between	startDate = "2023-01-01", endDate = "2023-03-31",	Report for donors and their funding programs printed	None	Functionality Check

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
	Jan 2023 and Mar 2023	outstream = PrintWriter	to the specified outstream		
22	Invalid date range (end date before start date)	startDate = "2023-03-01", endDate = "2023-01-31", outstream = PrintWriter	Method returns an empty set (no report generated)	None	Input Validation

12. **underfundedShelter** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
23	Shelters with lowest per-occupant capacities in Jan 2023	startDate = "2023-01-01", endDate = "2023-01-31", distance = 500, threshold = 3	Set of shelter names with the lowest per-occupant capacities during the specified period	None	Functionality Check
24	Invalid distance (negative)	startDate = "2023-01-01", endDate = "2023-01-31", distance = -100, threshold = 5	Method returns an empty set (no shelters considered)	None	Input Validation

13. **inspectionSchedule** Method:

Sr. No.	Description	Property Input Data	Expected Outcome	Side Effects	Type of Test Case
25	Generating an inspection schedule for the next 7 days	scheduleDays = 7, inspectLimit = 2	Map of staff members and their inspection schedules for the next 7 days	None	Functionality Check
26	Invalid inspection limit (negative)	scheduleDays = 7, inspectLimit = -1	Method returns an empty map (no schedule generated)	None	Input Validation