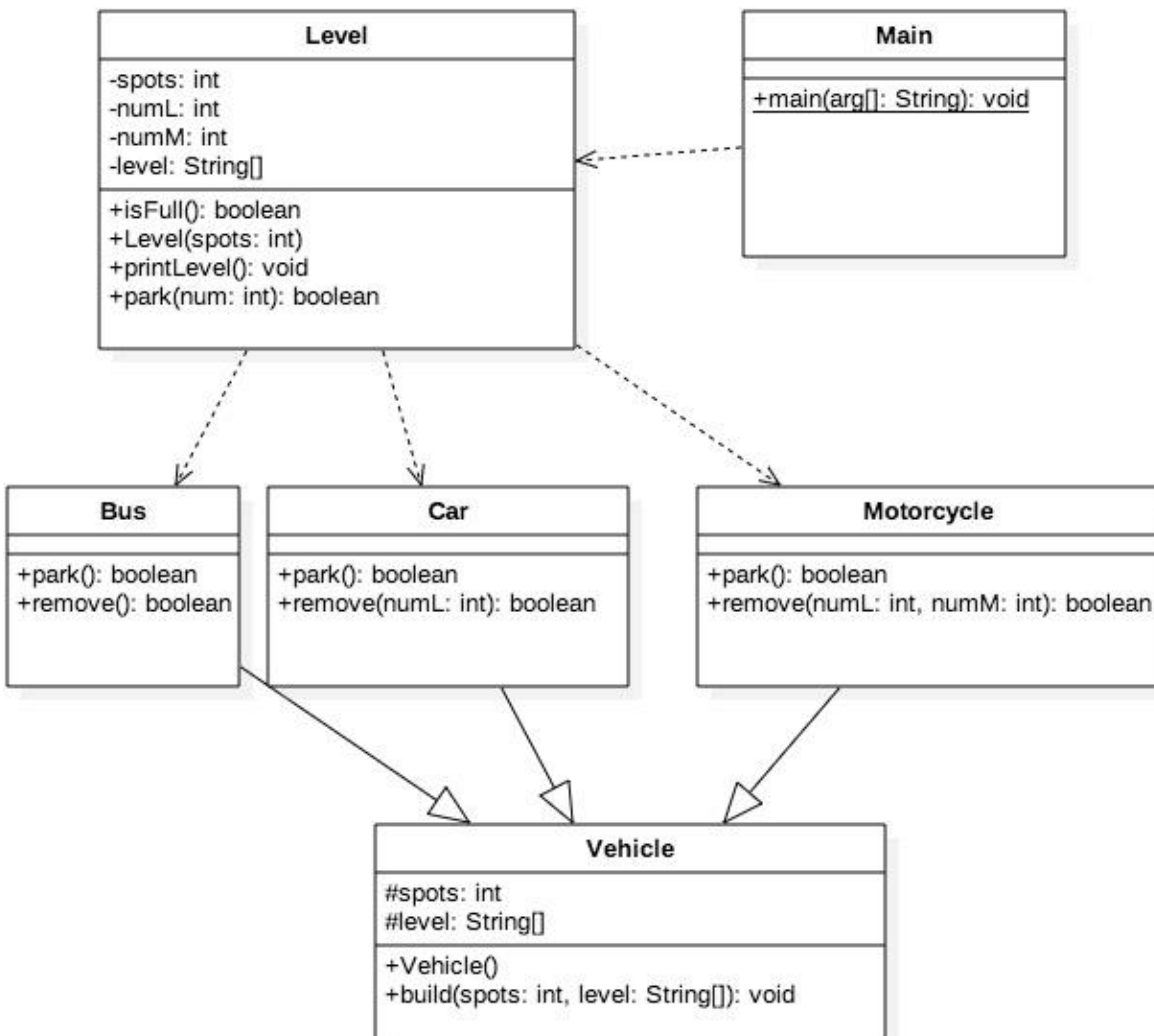Project Report

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1. Solution:
   - Use a String array as level
   - Create Level class => parking lot is a Level array
   - Park/remove a vehicle by comparing and replacing strings

2. User manual:
   - Compile & run
   - Enter # spots per level
   - Enter # levels
   - To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle
   - To remove, enter its number 2 times (e.g 11 for Bus)
   - Program ends only after all spots are parked

3. UML classes

Level

-spots: int
-numL: int
-numM: int
-level: String[]

+isFull(): boolean
+Level(spots: int)
+printLevel(): void
+park(num: int): boolean

Main

+main(arg[]: String): void

Bus

+park(): boolean
+remove(): boolean

Car

+park(): boolean
+remove(numL: int): boolean

Motorcycle

+park(): boolean
+remove(numL: int, numM: int): boolean

Vehicle

#spots: int
#level: String[]

+Vehicle()
+build(spots: int, level: String[]): void

4. Inputs & outputs

Sample run 1:
Enter # spots per level (recommend >= 30): 30
Enter # levels: 5
Level 0: llllllcccc cccccccccc ccccmmmmmm
Level 1: llllllcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking a Bus
Level 0: BBBBBlcccc cccccccccc ccccmmmmmm
Level 1: llllllcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: BBBBBCcccc cccccccccc ccccmmmmmm
Level 1: llllllcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: BBBBBCCccc cccccccccc ccccmmmmmm
Level 1: llllllcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking a Bus
Level 0: BBBBBCCccc cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm

Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: BBBBBCCCcc cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
3
Parking a Motorcycle
Level 0: BBBBBCCCMc cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: llllllcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking a Bus
Level 0: BBBBBCCCMc cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
3
Parking a Motorcycle
Level 0: BBBBBCCCMM cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: BBBBBCCCMM Ccccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm

Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: llllllcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking a Bus
Level 0: BBBBBCCCMM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: llllllcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking a Bus
Level 0: BBBBBCCCMM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: BBBBBlcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
1
Parking/Removing Failed. Final state:
Level 0: BBBBBCCCMM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: BBBBBlcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
11
Level 0: llllllCCCMM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: BBBBBlcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
22
Level 0: llllllCCMM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm

Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: BBBBBlcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
33
Level 0: llllllCCcM Cccccccccc ccccmmmmmm
Level 1: BBBBBlcccc cccccccccc ccccmmmmmm
Level 2: BBBBBlcccc cccccccccc ccccmmmmmm
Level 3: BBBBBlcccc cccccccccc ccccmmmmmm
Level 4: BBBBBlcccc cccccccccc ccccmmmmmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):

Process finished with exit code 130 (interrupted by signal 2: SIGINT)

Sample run 2:
    Enter # spots per level (recommend >= 30): 10
    Enter # levels: 1
    Level 0: llc ccc ccmm

    To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
    To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
    1
    Parking/Removing Failed. Final state:
    Level 0: llc ccc ccmm

    To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
    To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
    2
    Parking a Car
    Level 0: Clc ccc ccmm

    To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
    To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
    3
    Parking a Motorcycle
    Level 0: CMc ccc ccmm

    To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
    To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
    1
    Parking/Removing Failed. Final state:
    Level 0: CMc ccc ccmm

    To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
    To remove a vehicle, enter its number 2 times (e.g 11 for Bus):

2
Parking a Car
Level 0: CMC ccc ccmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: CMC Ccc ccmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: CMC CCc ccmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: CMC CCC ccmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: CMC CCC Ccmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
2
Parking a Car
Level 0: CMC CCC CCmm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
3
Parking a Motorcycle
Level 0: CMC CCC CCMm

To park, enter 1 for Bus, 2 for Car, 3 for Motorcycle.
To remove a vehicle, enter its number 2 times (e.g 11 for Bus):
3
Parking a Motorcycle
Level 0: CMC CCC CCMM

The parking lot is now full

Process finished with exit code 0