Relational Schema

IT Support(teamNumber: integer, phoneNumber: string)
Primary Key: Team Number
Functional Dependencies: 3NF
Team Number → Phone Number
Phone Number → Team Number

Ticket(ticketNumber: integer, status: string, dateCreated: date, lastUpdated: date)
Primary Key: Ticket Number
Foreign Key: DateResolved
Functional Dependencies:
Ticket Number → Status, DateCreated, DateResolved
DateResolved → Status

HelpDesk(helpDeskNumber: integer, phoneNumber: string)
Primary Key: HelpDesk Number
Functional Dependencies:
HelpDesk Number → Phone Number
Phone Number → HelpDesk Number

Department(departmentName: string, budget: float)
Primary Key: Department Name
Functional Dependencies:
DepartmentName → Budget

Building(buildingCode: string, buildingName: string, address: string)
Primary Key: Building Code
Functional Dependencies:
BuildingCode → BuildingName, Address
Address → BuildingCode
Address → BuildingName

Room(Room Number: integer, floor: integer)
Primary Key: Room Number
Functional Dependencies:
RoomNumber → Floor

Labs(labName: string, homepageURL: string, email: string)

Primary Key: Lab Name
Functional Dependencies:
Lab Name → Homepage URL, Email
Homepage URL → Lab Name, Email

User(ID: int, fullName: string, adminAccess?: boolean)
Primary Key: ID
Functional Dependencies:
ID → Full Name, Admin Access

Asset(inventoryNumber: integer, cost: float, name: string, model: string)
Primary Key: Inventory Number
Functional Dependencies:
InventoryNumber → Cost, Name, Model

Software License(inventoryNumber: integer, cost: float, name: string, model: string, licenseNumber: integer)
Primary Key: Inventory Number
Candidate Key: License Number
Functional Dependencies:
Inventory Number → Cost, Name, Model, License Number

Hardware(inventoryNumber: integer, cost: float, name: string, model: string, type: string, size: string)
Primary Key: Inventory Number
Functional Dependencies:
Inventory Number → Cost, Name, Model, Type, Size

Lab Equipment(inventoryNumber: integer, cost: float, name: string, model: string)
Primary Key: Inventory Number
Functional Dependencies:
Inventory Number → Cost, Name, Model

Electronics(inventoryNumber: integer, cost: float, name: string, model: string, wattage: integer, serialNumber: integer)
Primary Key: Inventory Number
Functional Dependencies:
Inventory Number → Cost, Name, Model, Wattage, Serial Number
Name, Model, Serial Number → Inventory Number, Cost, Wattage

Tools(inventoryNumber: integer, cost: float, name: string, model: string, brand: string, type: string)

Primary Key: Inventory Number

Functional Dependencies:

Inventory Number → Cost, Name, Model, Brand, Type

Normalization

For Ticket:

Minimum key: Ticket Number

Standard form:

Ticket -> Status

Ticket -> DateCreated

Ticket -> DateResolved

DateResolved -> Status

LHS is minimized, redundant FD's removed

DateResolved -> Status violates 3NF, so decompose:

R1(Ticket Number, DateResolved), R2(DateResolved, Status)

SQL DDL

```
CREATE TABLE it_support (
      helpdesk_number int NOT NULL PRIMARY KEY,
      phone_number varchar(15)
)

CREATE TABLE ticket (
      ticket_number int NOT NULL PRIMARY KEY,
      status varchar(50) NOT NULL,
      date_created date NOT NULL,
      last_updated date NOT NULL
);

CREATE TABLE helpdesk (
      helpdesk_number int NOT NULL PRIMARY KEY,
      phone_number varchar(15) NOT NULL
```

```
);



CREATE TABLE it_support (
      team_number int NOT NULL PRIMARY KEY,
      phone_number varchar(15) NOT NULL
);

CREATE TABLE department (
      dept_name varchar(50) NOT NULL PRIMARY KEY,
      budget float NOT NULL
);

CREATE TABLE building (
      building_code varchar(4) NOT NULL PRIMARY KEY,
      building_name varchar(50) NOT NULL,
      address string NOT NULL
);

CREATE TABLE room (
      room_number int NOT NULL PRIMARY KEY,
      floor int NOT NULL,
      building_code varchar(5) FOREIGN KEY REFERENCES
building(building_code) NOT NULL
);

CREATE TABLE labs (
      lab_name varchar(50) NOT NULL PRIMARY KEY,
      phone_number varchar(15) NOT NULL,
      homepage_url varchar(50) NOT NULL,
      email varchar(25) NOT NULL,
      dept varchar(50) FOREIGN KEY REFERENCES department(dept_name) NOT
NULL
);

CREATE TABLE user (
      id int NOT NULL PRIMARY KEY,
      full_name varchar(150) NOT NULL,
      admin_access number(1) NOT NULL,
```

```
);

CREATE TABLE asset (
      inventory_number int NOT NULL PRIMARY KEY,
      cost float NOT NULL,
      name varchar(150) NOT NULL,
      model varchar(150)
);
```

Populated Tables (with 5 tuples)

```
INSERT INTO IT_Support
VALUES (1, 604-822-2441),
(2, 604-822-7956),(3, 604-822-2101),
(4, 604-822-2211),(5, 604-827-4449);
```

IT_Support

teamNumber	phone_number
1	604-822-2441
2	604-822-7956
3	604-822-2101
4	604-822-2211
5	604-827-4449

```
INSERT INTO Ticket
VALUES (20220000,'Resolved','2022-09-30','2022-10-03'),
(20220001,'Assigned','2022-10-01','2022-10-01'),
(20220002,'Resolved','2022-10-02','2022-10-03'),
(20220003,'New','2022-10-03','2022-10-03'),
(20220004,'New','2022-10-04','2022-10-04');
```

Ticket

ticketNumber	status	dateCreated	lastUpdated
20220000	Resolved	2022-09-30	2022-10-03
20220001	Assigned	2022-10-01	2022-10-01

20220002	Resolved	2022-10-02	2022-10-03
20220003	New	2022-10-03	2022-10-03
20220004	New	2022-10-04	2022-10-04

```
INSERT INTO HelpDesk
VALUES (1, 604-822-3061),
(2, 604-822-2755),(3, 604-838-6437),
(4, 604-822-2876),(5, 604-827-0027);
```

HelpDesk

helpDeskNumber	phone_number
1	604-822-3061
2	604-822-2755
3	604-838-6437
4	604-822-2876
5	604-827-0027

```
INSERT INTO Department
VALUES ('Computer Science',35000.00),
('Psychology',12000.00),
('Physics',20000.00),
('Economics',25000.00),
('Philosophy',15000.00);
```

Department

departmentName	budget
Computer Science	35000.00
Psychology	12000.00
Physics	20000.00
Economics	25000.00
Philosophy	15000.00

```
INSERT INTO Building
VALUES ('ICCS','Institute for Computing','2366 Mail Mall'),
('KENN','Douglas Kenny','2136 West Mall'),
('HENN','Hennings','6224 Agricultural Road'),
('IONA','Iona Building','6000 Iona Drive'),
('BUCH','Buchanan','1866 Main Mall');
```

Building

buildingCode	buildingName	address
ICCS	Institute for Computing	2366 Main Mall
KENN	Douglas Kenny	2136 West Mall
HENN	Hennings	6224 Agricultural Road
IONA	Iona Building	6000 Iona Drive
BUCH	Buchanan	1866 Main Mall

```
INSERT INTO room (room_number, floor)
VALUES (350,3),(2303,2),(310,3),(005,1),(201,2);
```

Room

roomNumber	floor
350	3
2303	2
310	3
005	1
201	2

```
INSERT INTO Labs
VALUES ('ASAP Lab','asap.psych.ubc.ca','asap@psych.ubc.ca'),
('Behaviorial Lab','zhaolab.psych.ubc.ca','zhao@psych.ubc.ca'),
('Computer Vision Lab','vision.cs.ubc.ca','vision@cs.ubc.ca'),
('Visual Cognition Lab','viscoglab.psych.ubc.ca','viscog@psych.ubc.ca'),
('Algorithms Lab','cs.ubc.ca/labs/algorithms','algorithm@cs.ubc.ca');
```

Labs

labName	homepageURL	email

ASAP Lab	asap.psych.ubc.ca	asap@psych.ubc.ca
Behaviorial Lab	zhaolab.psych.ubc.ca	zhao@psych.ubc.ca
Computer Vision Lab	vision.cs.ubc.ca	vision@cs.ubc.ca
Visual Cognition Lab	viscoglab.psych.ubc.ca	viscog@psych.ubc.ca
Algorithms Lab	cs.ubc.ca/labs/algorithms	algorithm@cs.ubc.ca

```
INSERT INTO User
VALUES (30515167,'Eric Hsieh',True),
(91621482,'Serdar Hasan',True),
(22451884,'Andy Zhao',True),
(74723029,'John Smith',False),
(23156890,'Elon Jobs',False);
```

User

ID	fullName	adminAccess?
30515167	Eric Hsieh	True
91621482	Serdar Hasan	True
22451884	Andy Zhao	True
74723029	John Smith	False
23156890	Elon Jobs	False

```
INSERT INTO Asset
VALUES (300010,4399.00,'Macbook Pro 16"','2021 M1 Max, 1TB, 32GB'),
(300011,4999.00,'Mac Studio','2022 M1 Ultra, 1TB, 32GB'),
(300012,1499.00,'iPad Pro 12.9"','2022 M2, 512GB'),
(300013,6299.00,'Pro Display XDR','2021 Standard glass'),
(300014,1199.99,'Synology DS1621+','2021 AMD Ryzen V1500B');
```

Asset

inventoryNumber	cost	name	model
300010	4399.00	Macbook Pro 16”	2021 M1 Max, 1TB, 32GB
300011	4999.00	Mac Studio	2022 M1 Ultra, 1TB, 32GB

300012	1499.00	iPad Pro 12.9”	2022 M2, 512GB
300013	6299.00	Pro Display XDR	2021 Standard glass
300014	1199.99	Synology DS1621+	2021 AMD Ryzen V1500B

```
INSERT INTO Software_License
VALUES (100010,500.00,'MATLAB R2022b','2022, MacOS','KZ9AMK8E'),
(100011,500.00,'MATLAB R2022b','2022, MacOS','QVH3USDY'),
(100012,500.00,'MATLAB R2022b','2022, Windows','KKA2AIEX'),
(100013,169.00,'Office Home','2021','RP4X545T'),
(100014,200.00,'Adobe Acrobat','2021','VBAYNENQ');
```

Software_License

inventoryNumber	cost	name	model	licenseNumber
100010	500.00	MATLAB R2022b	2022, MacOS	KZ9AMK8E
100011	500.00	MATLAB R2022b	2022, MacOS	QVH3USDY
100012	500.00	MATLAB R2022b	2022, Windows	KKA2AIEX
100013	169.00	Office Home	2021	RP4X545T
100014	200.00	Adobe Acrobat	2021	VBAYNENQ

```
INSERT INTO Hardware (inventoryNumber, cost, name, model, type, size)
VALUES (200010,19.99,'Hex Spacer Standoffs','Jucoan
M3','standoff','M3x12mm'),
(200011,0.72,'Bolt Size Flat Washers','Paulin','washer','0.5 inch'),
(200012,18.00,'Double Sided Protoboard','LYM','PCB','10cm x 15cm'),
(200013,12.59,'Electrolytic capcitor','Gikfun','10uF capacitor','2mm');
INSERT INTO Hardware
VALUES (200014,8.99,'M.2 Screw Set','24 piece mounting screw set','screw');
```

Hardware

inventoryNumber	cost	name	model	type	size
200010	19.99	Hex Spacer Standoffs	Jucoan M3	standoff	M3x12mm
200011	0.72	Bolt Size Flat Washers	Paulin	washer	½ Inch

200012	18.00	Double Sided Protoboard	LYM	PCB	10cm x 15cm
200013	12.59	Electrolytic capcitor	Gikfun	10uF capacitor	2mm
200014	8.99	M.2 Screw Set	24 piece mounting screw set	screw	

```
INSERT INTO Lab_Equipment
VALUES (400001,25.00,'Soldering Iron','Weller'),
(400002,350.00,'Microscope','Nikon'),
(400003,4.00,'iFixit tool kit','iFixit'),
(400004,35.00,'iFixit tool kit','iFixit'),
(400005,359.00,'Oscillator','Siglent SDG1032');
```

Lab_Equipment

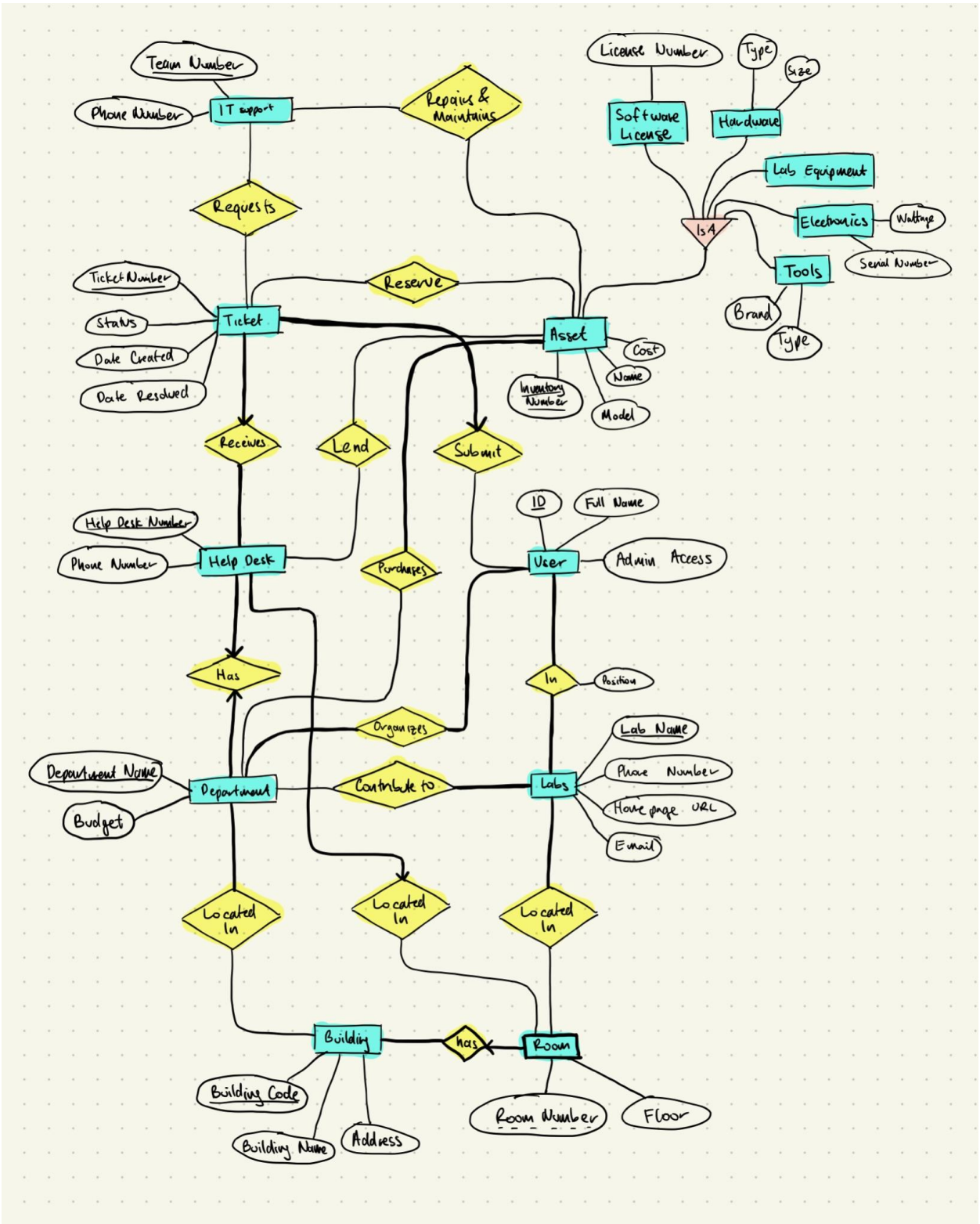
inventoryNumber	cost	name	model
400001	25.00	Soldering Iron	Weller
400002	350.00	Microscope	Nikon
400003	35.00	iFixit tool kit	iFixit
400004	35.00	iFixit tool kit	iFixit
400005	359.00	Oscillator	Siglent SDG1032

```
INSERT INTO Electronics
VALUES (200010,550.00,'Intel Core i7-12700K','12th Gen, 5.0 GHz','95',
'2ZGfE5hU'),
(200011,2099.99,'NVIDIA GeForce RTX 4090','24GB, 2.52 GHz','450',
'5XWbE7i7'),
(200012,1369.69,'AMD Radeon RX 6950 XT','16GB, 2.1 GHz','300','8dbkpLLJ'),
(200013,83.99,'Crucial RAM DDR4','16GB','3','9QhceCdm'),
(200014,159.99,'Samsung 870 PRO','1TB','4','3SUHgqAt');
```

Electronics

inventoryNumber	cost	name	model	wattage	serial number

200010	550.00	Intel Core i7-12700K	12th Gen, 5.0 GHz	95	2ZGfE5hU
200011	2099.99	NVIDIA GeForce RTX 4090	24GB, 2.52 GHz	450	5XWbE7i7
200012	1369.69	AMD Radeon RX 6950 XT	16GB, 2.1 GHz	300	8dbkpLLJ
200013	83.99	Crucial RAM DDR4	16GB	3	9QhceCdm
200014	159.99	Samsung 870 PRO	1TB	4	3SUHgqAt


Team Number
Phone Number
IT support
Repairs & Maintains
License Number
Type
Size
Software License
Hardware
Lab Equipment
Is A
Electronics
Wattage
Serial Number
Tools
Brand
Type
Requests
Ticket Number
Status
Date Created
Date Resolved
Ticket
Reserve
Asset
Cost
Name
Model
Inventory Number
Receives
Lend
Submit
ID
Full Name
Help Desk Number
Phone Number
Help Desk
Purchases
User
Admin Access
Has
In
Position
Organizes
Lab Name
Phone Number
Homepage URL
Email
Department Name
Budget
Department
Contribute to
Labs
Located In
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Located In
Building
has
Room
Building Code
Building Name
Address
Room Number
Floor