Table 1: Entity Domain Constraints

Entity	Attributes	Type	Domain
Websites/Vendor	URL (**PK)**	String	A unique, valid website URL.
	Company	String	The name of the company.
Warehouses	Warehouse_ID (**PK)**	Int	Unique real number in range 0001-9999.
	URL (**FK)**	String	A unique, valid website URL
	Location	Int	Unique, 5 digit number zipcode.
Monitors	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Screen_Size	Int	Size of the phone diagonally in inches.
	Resolution	String	In the format of "(number) x (number)"
	Refresh_rate	Int	Positive number in hz units.
	Type	String	"oled" or "va" or "ips"
	Audio	Boolean	If speakers are included or not.
	Hdmi	Int	Positive number of HDMI ports, including 0.
	Displayport	Int	Positive number of ports, including 0.
	Dvi	Int	Positive number of ports, including 0.
	Color	String	Color of bezels, I.E: Red, blue, orange, green, etc.
Keyboards	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Color	String	Color of keyboard, I.E: Red, blue, orange, green, etc.
	Backlight_Color	String	Color of backlights, I.E: Red, blue, orange, green, etc.
	Numpad	Boolean	If a numpad is included or not.
	Wireless	Boolean	If the keyboard is wireless or not.
Phones	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Resolution	String	In the format of "(number) x (number)"
	Screen_type	String	**"**oled" or "lcd"
	Ip_rating	int	A 2 digit long positive number.
	Storage	Int	Any positive number over 0 in GB.
	ram	Int	Any positive number over 0 in GB.
	Cpu	String	The name of the CPU chip.
	OS	String	Operating systems name + version number.
	Carrier	String	Name of phone carrier.
	5G	Boolean	Yes if the phone has 5G connection, no otherwise.
	Battery	Int	Positive number in mAH units.
	Size	Int	Size of the phone diagonally in inches.
Motherboards	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Chipset	String	Unique alphanumeric identifier.
	Num_usbports	Int	Any positive number over 0.
	Network	Bool	Yes if wifi+Bluetooth is included, no otherwise.
	form_factor	String	"ATX" or "Micro ATX" or "Mini ATX."
Storage (HDDs)	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.

Storage (HDDs) continued…	capacity	Int	Any positive number over 0 in GB.
	storage_type	String	HDD or SSD.
	storage_standard	String	SATA or NVME.
	Form_factor	String	“m2” or “3.5” or “2.5”
	wattage	Int	Any positive number over 0.
Memory	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Memory_capacity	Int	Any positive number over 0 in GB.
CPUs	Item_ID (**FK**)	Int	Unique real number in range 0001-9999.
	Chipset	String	Unique alphanumeric identifier.
	Integrated_graphics	Boolean	Yes for if there are IG, no if not.
	Wattage	Int	Any positive number over 0.

Table 2: Relationship Domain Constraints

Relationship	**Functionality**	**Attribute**	**Type**	**Domain**
Contains	One-To-Many	Item_ID (**FK)**	Int	Unique real number in range 0001-9999.
		Warehouse_ID (**FK)**	Int	Unique int in range 0001-9999.
		count	Int	Stock amount number that is 0 or greater.
		Current_price	Double	Number to represent price in dollars.
		Historical_low	Double	Number to represent price in dollars of the lowest price A specific item has ever been.
		Historical_high	Double	Number to represent price in dollars of the highest price A specific item has ever been.
		Sale_status	String	“Sale” or “Clearance” or “None”
		Shipping_price	Double	Number to represent price in dollars of shipping costs.
		Item_name	String	The name of the product.
		category	String	The category of the product, I.E. CPU, monitor, RAM…
		manufacturer	String	The name of the brand.
		series	String	The name of the product line. (Null if not applicable.)
		Release_date	String	The day the product was first
		Model_number	String	An alphanumeric string to identity a model.

Note for Constraints and Functionalities

- **For URL, no two vendors can have the same URL. There will only be a single instance of each URL.**
- **However, different warehouses can have the same products. An 8 GB Ballistix RAM pack can exist in two different warehouses, but those warehouses cannot have the same URL. This does NOT mean they will have the same product ID within the warehouse system though. They may be the same product, but they would have different IDs for each warehouse.**
- **'Contains' is the only notable relationship, as this database primarily checks for various factors across multiple warehouses/websites The warehouses "contain" items, and all of the items can be broken down into a specific category, such as phone, monitor, keyboard and so forth. This implies a one-to-many relationship that trickles down from items then to each of its components, as any item can only exist in one warehouse but a warehouse can also hold many items. Therefore, the sub-categories of monitor, keyboard, phone, etc. all share a parent-child relationship with "item."**