**Computers by Ralph  
Forrest Fallon**

**Summary** The world of personal computers is one with thousands of variables; this is often the case when a functioning product requires dozens of parts with dozens of options pertaining to what a person needs out of their computer. My imaginary friend, Ralph, has been operating a pc-building business for about a year now, and his customer base grows weekly.

Ralph consults with his customers about what they need their computer to be capable of and what their budget is. After the initial meeting, Ralph will use the parts available in his inventory to construct the computer his customer has agreed upon.

Ralph has a few different means of purchasing computer parts for a customer as well as maintaining a base inventory. Ralph considers the following to be necessary for a functioning office PC: case, motherboard, RAM, storage, and the processor. For a gaming PC, Ralph simply adds on a graphics card and a better processor cooler. Ralph purchases parts from Cosmo’s Parts Store in his city and will purchase parts in bulk, so he has plenty of options on hand. Cosmo knows Ralph well, and often calls him with updates on stock. In a way, Cosmo relies on Ralph for advertising, as does Ralph rely on Cosmo for the same. Their relationship is surprisingly mutually beneficial; Ralph provides the one-on-one customer service that Cosmo’s store is just not capable of doing, but at the same time Ralph recommends customers to Cosmo’s for specialty repair services or parts that deal with “after-market” customizations.

When Ralph reaches a low count of any given part, he will go out and buy that part in bulk. The low counts of each part are listed in the business rules. If he does not have a part on hand, he must go out and buy this part in bulk which always results in the customer delivery date being delayed.

What Ralph is struggling with: Ralph feels as though his re-order points are not weighted correctly to correlate with the popularity of each product. He finds himself going to the store to purchase specific products more often than others and feels as though his reorder points should reflect that better. Without a real-time inventory tracking system, Ralph merely hopes that he has the inventory on hand to fulfil his current orders. Not only does he want a better grasp on his re-order points, but he wants to in-turn decrease the average wait time his customers have. He does not have the time to figure this out himself, so he needs a database created to show the popularity of each package, the total parts used within given timeframes, total parts on hand, number of re-orders per part, and average time to deliver.

**Data Questions**

1. **What is Ralph’s most popular product? Least?**
2. **What is the percentage breakdown of each product purchased from Ralph?**
3. **What parts are re-ordered the most? Least?**
4. **How many orders can Ralph handle at his current re-order points before he runs out of stock?**
5. **Are there any products that Ralph should only buy parts for at a per order basis?**

**Stakeholders**

1. Ralph: business owner
2. Customers: computer purchasers
3. Cosmo’s Part Store: Computer parts supplier
4. Computer parts manufacturers: end product suppliers
5. Shipping Companies: product delivery for Ralph

**Business Rules**

1. An Office PC must have a case, motherboard, ram, storage, and processor.
2. A Gaming PC must have a case, motherboard, ram, storage, processor, graphics card, and processor cooling system.
3. A customer must present their full name, phone number, mailing address, email address, and payment method for an order.
4. A customer must choose at least one of 6 available options under Ralph’s offerings.
5. A computer part must have a Part Name and Part Tier attached.
6. Cosmo’s parts store orders from Ralph must have transaction dates and amounts purchased.
7. A delivery date must have a date ordered, a date delivered, and a summation of days between the order and delivery date.
8. Ralph’s current average days-to-delivery is 4 business days.
9. The PC packages currently available through Ralph include low-tier office PC, mid-tier office PC, high-tier office PC, low-tier gaming PC, mid-tier gaming PC, high-tier gaming PC.
   1. Office PC
      1. Low Tier: Tier 1 case, Tier 1 motherboard, Tier 1 RAM, Tier 1 storage, Tier 1 processor
      2. Mid-Tier: Tier 1 case, Tier 1 motherboard, Tier 1 RAM, Tier 2 storage, Tier 2 processor
      3. High Tier: Tier 2 case, Tier 2 motherboard, Tier 2 RAM, Tier 3 storage, Tier 3 processor
   2. Gaming PC
      1. Low Tier: Tier 1 case, Tier 1 motherboard, Tier 1 RAM, Tier 1 Storage, Tier 1 processor, Tier 1 graphics, Tier 1 cooling system
      2. Mid-Tier: Tier 2 case, Tier 2 motherboard, Tier 2 RAM, Tier 2 Storage, Tier 2 processor, Tier 2 graphics, Tier 2 cooling system
      3. High Tier: Tier 3 case, Tier 3 motherboard, Tier 3 RAM, Tier 3 Storage, Tier 3 processor, Tier 3 graphics, Tier 3 cooling system
10. Low counts:
    1. Cases: 9 cases (3 of each different flow tier)
    2. Motherboards: 9 motherboards (3 of each different tier)
    3. RAM: 12 units (4 of each tier)
    4. Processor: 12 chips (4 of each different tier)
    5. Graphics cards: 6 cards (2 of each different tier)
    6. Cooling systems: 6 systems (2 of each different tier)
11. Customer name, phone number, email, mailing address, and payment method are stored in Ralph’s books. He does not need any more info on the customer than that, but Ralph also stores the “build” and parts used on each customer profile once complete.
12. Customers can order more than one PC from Ralph at a time.

**Glossary**

A **Computer Part (often referred to throughout this project as a “part”)** is a modular, individual piece required to make a functioning computer. Each part in Ralph’s offerings is needed to complete a PC build.A **PC** is a personal computer, the summation of the following:

1. **Case:** where all the computer parts are mounted and safely encased. Higher end cases feature better air flow for cooling off the computer parts, more options for mounting of parts, and cosmetic features as well.
2. **Motherboard**: the hub for all the components. Higher quality motherboards contain features such as more ports for parts, Wi-Fi on board, and cosmetic RGB lighting.
3. **RAM:** Also known as random access memory, this is what the computer uses to multitask efficiently. Every software program uses a small part of this memory, and more intensive programs (video games, video/sound editing software) use a large majority of available RAM in most systems. The more RAM, the more the computer can handle at once while maintaining operating speed.
4. **Hard Drive:** Not to be confused with RAM, hard drives are what determine the number of files a computer can store. Ralph currently offers two types of hard drive, as detailed below. It is worth noting that Ralph’s offerings deal in **gb’s (gigabytes, 1024 megabytes) and tb’s (terabytes, 1024 gigabytes).**
5. **Processor:** Also known as the “computer chip.” A processor is the conductor of the orchestra of parts on board. Processors are often graded on their GHz, or gigahertz, which are explained below. The higher the GHz a processor has, the faster and more capable that processor is for completing tasks.
   * **GHz/Gigahertz:** A unit used to measure the amount of “clock ticks” a processor can provide in a single second. If a processor is rated at 3.0-GHz, its clock is ticking 3.1 billion times per second.
6. **Graphics Card:** Also known as a video card or display card, these are what allows for real-time rendering of graphics created by video games or video editing software and display them to a monitor. For the sake of this project, graphics card grading has been simplified to tier 1, 2, or 3 series cards, with Tier 1 being the lowest quality and Tier 3 being the highest quality. Higher quality graphics cards are capable of rendering higher resolution images at higher speeds than their less capable counterparts.
7. **Cooling System:** When using a computer for gaming or editing of some kind, the processor chip is often working as hard as it possibly can. Because of this, an immense amount of heat is produced by the chip, and without proper cooling systems in place, this decreases the lifespan of the processor chip. Ralph offers a tier 1, tier 2, and tier 3 cooling system which cool the processor to cooler temperatures as the tier goes up.
8. **Part Tier:** As described in each of the above, computer parts in Ralph’s business have a Tier rating 1-3. 1 being the lowest, cheapest option, and 3 being the most fully featured product.
9. **Part Type:** As shown in the conceptual model, parts are labeled as Part Type. This includes motherboard, case, storage, processor, RAM, graphics card, and cooling system.
10. **Kit Type:** Each of Ralph’s offerings either lie in the OfficeKit or GamingKit. These “kits” are a summation of parts needed to complete each kit.

**Conceptual Model**

**Diagram

Description automatically generated**

**Logical Model  
Diagram

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