

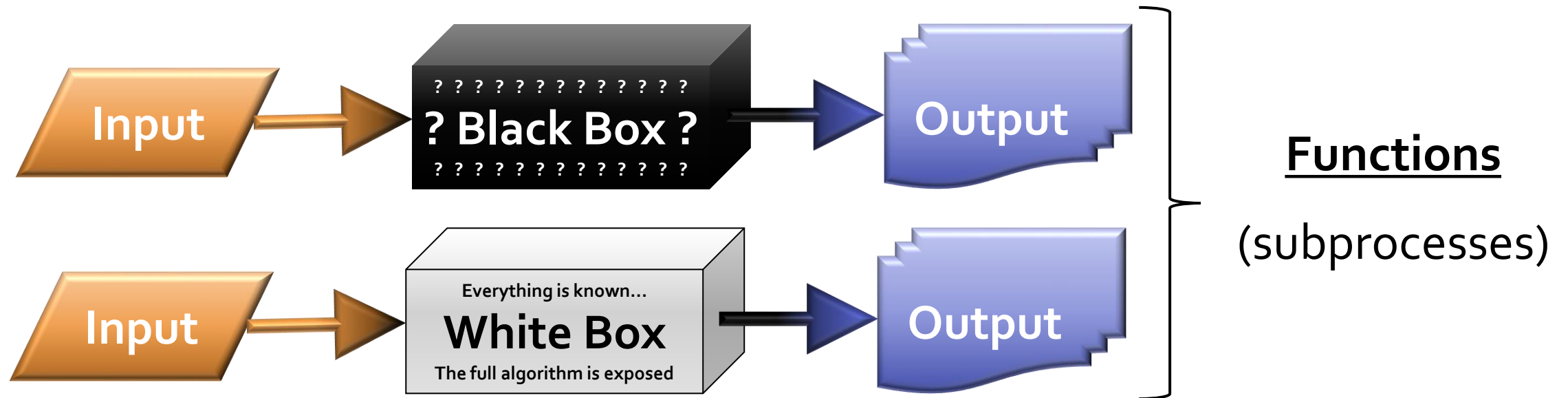
APS145

Applied Problem Solving & Computational Thinking

Workshop #8 - Supplemental

Black & White Boxes

- **INPUT** is provided to a process
- The process (**BLACK|WHITE BOX**) uses the input in some way
- **OUTPUT** is generated



Grocery Self-Checkout

- **Grocery self-checkout**
 - Line where you scan/weigh/enter your own items into the system
 - Bag your own items
 - Pay for your purchase



<https://sintelsystems.com/wp/wp-content/uploads/2018/08/self-checkout-kiosk-Ralphs-1024x576.jpg>

Non-Perishable Items...

- **Non-perishable** (White Box)
 - These items have barcodes
 - Items can be scanned
 - Examples: Canned goods, Packaged goods, Cartons, etc.
- **Available Black Box**
 - Data lookup for product info.



Perishable Items...

- **Perishable** items (White Box)
- Require more user input as these items don't have a barcode
- **Case-1: By Weight**
 - Might require “weighing” as they are priced by weight (\$/kg)
 - Place item on weigh-scale and system will read the weight
 - Examples: Apples, Peaches, Banana's
- **Case-2: By Quantity**
 - Might require “quantity” input as these items are priced by # of units
 - Examples: Peppers, Broccoli, Cauliflower



https://s.yimg.com/uu/api/res/1.2/AP.bZIUJfFF05zLYQ9x8rA---B/aDoyODMyO3c9NDI1NjtzbtOxOzFwcGlkPXloYWNoeW9u/http://media.zenfs.com/en-US/homerun/money_403/f6ed613c196b75ab1942afb470f1c408

Available Black Boxes

- Weigh Item (scale)
- Fetch Products by Category
- Data lookup for product info.

Your tasks [Logic-1]

Logic-1

- Describes the White Box process for checking out a **non-perishable** barcoded item (**taxed**)
- Exactly HOW **should** this process work?
- Include what should happen if an item **can't be scanned** or **isn't found in the product database** after scanning – exactly **how** should the application handle this?
- **Available Black Box**
 - Data lookup for product info.

Your Tasks [Logic-2]

Logic-2 focus on the white box, only for the single item no transaction process

- Describes the White Box process for checking out a perishable item (not taxed)
 - Exactly HOW **should** this process work?
 - Need to provide the customer a way to locate the matching item in the product database – HOW exactly **should** this work?
 - Remember, a product will be **1** of the following cases:
 - **By-weight** (price is determined based on cost/weight)
 - **By-quantity** (price is determined based on unit cost)
- **Available Black Boxes**
 - Weigh Item (scale)
 - Fetch Products by Category
 - Data lookup for product info.

Your Tasks [Logic-3]

Logic-3

- Describes the White Box **Payment** process:
 - Receives a list of perishable and non-perishable items (assumed to have been done in previous logic parts)
 - Must loop each item to determine tax/not-taxed etc.
 - Itemized receipt must be generated (**indicate perishable items from non-perishable**)
 - Must contain logic for determining sub-total, taxes, and total
 - Will **call sub-processes as required** for 3rd party payment system
- **Available Black Box**
 - Process Payment (based on payment method)

Your Tasks: Final Solution

Group Solution

- Assemble all parts as required to complete a full solution of the self-checkout process
- Refine the solution with your peer group members so it flows as expected
- Make sure **data structure representation** and **variables** are consistent
- Provide a “main” process