

Final Report for Hospital Preference Card Software

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Objective

The objective of this project is to develop a comprehensive software tool designed to streamline and optimize the management of surgical preference cards in a hospital setting. Surgical preference cards are critical documents that list all necessary instruments, supplies, and equipment needed for specific surgical procedures. Proper management of these cards ensures that surgical teams are fully prepared, thereby minimizing the risk of delays, errors, and inefficiencies during operations. The software aims to provide an intuitive, user-friendly interface that allows hospital staff to easily edit existing preference cards, add new services, instruments, and soft goods, and manage quantities and hold statuses. Additionally, the software supports robust search functionalities and maintains data integrity by ensuring consistent column headers across input files.

Overview

The Hospital Preference Card Software is an innovative solution tailored to the needs of hospital operating rooms and sterile processing departments. By offering a streamlined approach to managing surgical preference cards, the software enhances the efficiency and accuracy of preparing for surgical procedures. The software is packaged as an executable file, ensuring ease of deployment and use without the need for complex installations or extensive technical knowledge. Users can effortlessly modify and extend preference cards, ensuring that all required items are included and accurately documented. The persistent data management features, combined with flexible file handling and powerful search capabilities, make the software an indispensable tool for hospital staff. Overall, the software aims to reduce the administrative burden associated with surgical preparations, allowing medical professionals to focus more on patient care and less on logistical concerns.

Features

The software is equipped with several features aimed at enhancing the management of preference cards:

1. Edit Existing Preference Cards: Users can modify existing Excel files containing preference cards. This allows for updates and adjustments to be made as needed (Figure 1).
2. Add New Services, Instruments, and Soft Goods: Users can expand preference cards by adding new items, ensuring all necessary materials are included (Figures 1, 2 and 3).

3. Persistent Soft Goods Window: The software allows users to open and close the soft goods window without losing their inputs, providing flexibility in the editing process (Figure 4).
4. File Selection Flexibility: Users can select new instrument or soft goods files as long as the column headers remain consistent, allowing for adaptability in data management.
5. Search Functionality: The software includes a search feature to help users quickly find specific instruments or soft goods within their respective windows (Figure 8).
6. Customizable Quantities and Holds: Users can input any quantity and hold status for instruments and soft goods, ensuring precise inventory management (Figures 3 and 4).

Illustrations

The following illustrations depict the various screens and functionalities provided by the software:

Figure 1. Main Menu: Choosing Between Existing and New Preference Card

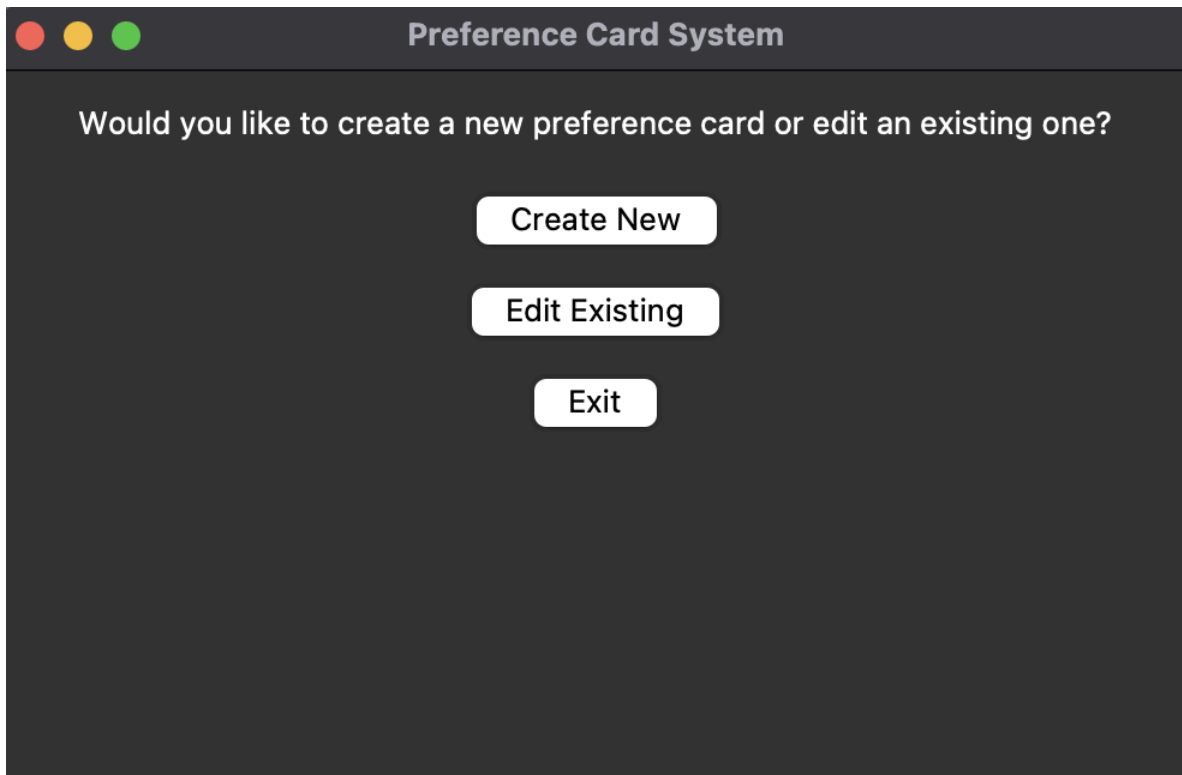


Figure 2. Selecting Services in a multi-selection window

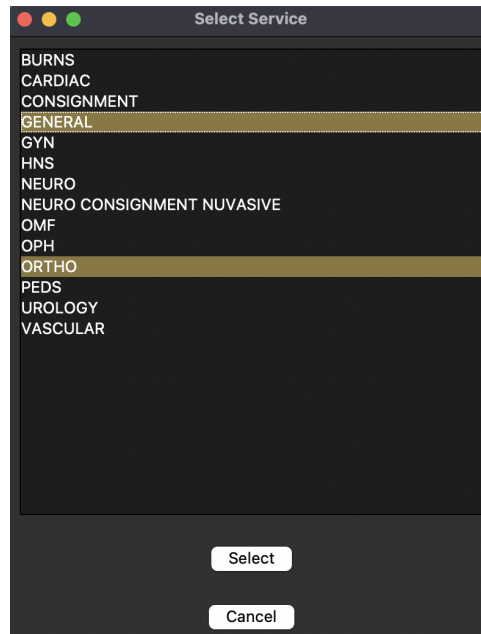


Figure 3. Instrument Screen with options to put quantity and select hold

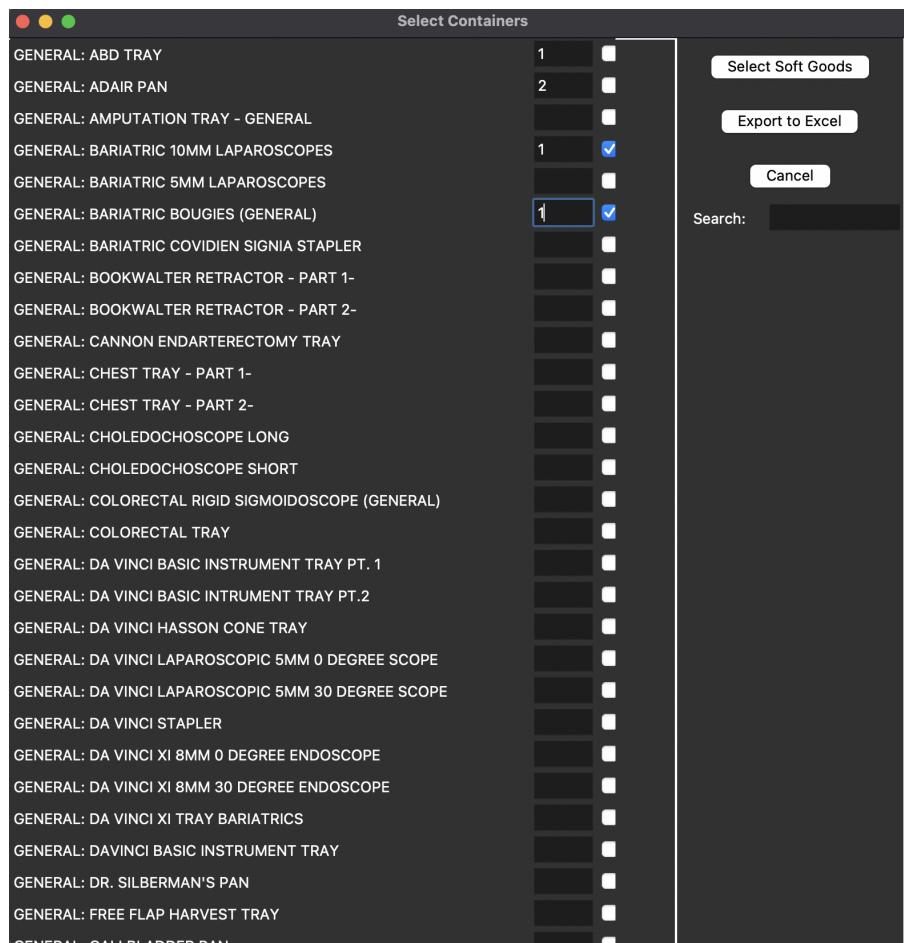


Figure 4. Soft Goods Screen with options to put quantity and select hold

The screenshot shows a window titled "Select Soft Goods" with a list of medical supplies. Each item has a quantity input field and a checkbox for selecting a hold. The items listed are:

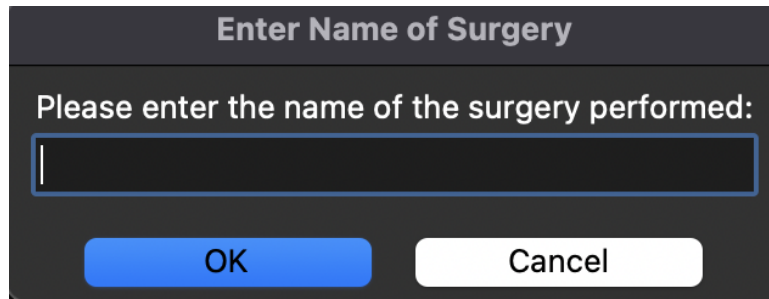
Item Description	Quantity	Hold
"BAG, PAPER, BWN, #12, 7x4x14"" IM# 10277289", Vendor Part #: NONBPB12	1	<input type="checkbox"/>
"BAG, PAPER, BWN, #2, 4x2.5x8"" IM# 10277286", Vendor Part #: NONBPB2	1	<input type="checkbox"/>
"BAG, PAPER, BWN, #25, 8.5x5x18"" IM# 10241024", Vendor Part #: NONBPB25	1	<input type="checkbox"/>
ADAPTER BLOOD COLLECTION MULTISAMPLE TUBE HOLDER STERILE LATEX FREE DISPOSABLE BD VACUTAINER BD LUER-LOK IM# 10003025, Vendor Part #: B-D367290	1	<input type="checkbox"/>
ADAPTER BRONCHOSCOPE BLUE 15MM PNEUPAC 2 AXIS SWIVEL FIBER OPTIC O2 STERILE LATEX FREE DISPOSABLE IM# 10050168, Vendor Part #: PTX625191	1	<input checked="" type="checkbox"/>
ADAPTER CATHETER 11/32IN 1/8-3/8IN PLASTIC LUER LOCK SYRINGE CONNECTOR POSITIVE GRIP RIDGE STERILE LATEX FREE 3/32IN TAPER IM# 10050211, Vendor Part #: ADD2219		<input type="checkbox"/>
ADAPTER CIRCUIT 22MM 15MM 15MM MONITOR STANDARD LUER FIT LIFESAVER, Vendor Part #: HUD1669		<input type="checkbox"/>
ADAPTER MDI ADULT 22MM 15-22MM TETHER STRAP INLINE LATEX FREE DISPOSABLE DOSE COUNTER CANISTER STEM IM# 10050261, Vendor Part #: SMDIA1000ML		<input type="checkbox"/>
ADAPTER TUBING PLASTIC UNIVERSAL NUT NIPPLE BARB HOSE DISPOSABLE STANDARD DISS O2 OUTLET IM# 10078596, Vendor Part #: HUD2555		<input type="checkbox"/>
ADHESIVE LIQUID STYRAX GUM MASTIC ALCOHOL METHYL SALICYLATE 2/3ML WATERPROOF VIAL PREP NONSTAIN STERILE LATEX FREE CLEAR NONHAZARDOUS MASTISOL IM# 10052516, Vendor Part #: FRN052348CS		<input type="checkbox"/>
ADHESIVE SKIN CLOSURE 2 OCTYL CYANOACRYLATE .7ML LIQUID APPLICATOR MICROBIAL BARRIER FLEXIBLE DERMABOND ADVANCED IM# 10029500, Vendor Part #: ETHDNX12		<input type="checkbox"/>
AIRWAY 22FR 5MM 17CM MEDIPRENE NASOPHARYNGEAL ADJUSTABLE FLANGE SOFT ELASTIC FINISH PATIENT COMFORT LATEX FREE NASAL PEDIATRIC STERILE IM# 10050964, Vendor Part #: HUD18542022		<input type="checkbox"/>
AIRWAY 26FR 6MM 17CM MEDIPRENE NASOPHARYNGEAL ADJUSTABLE FLANGE SOFT ELASTIC FINISH PATIENT COMFORT LATEX FREE PEDIATRIC STERILE IM# 10050965, Vendor Part #: RSH1854226		<input type="checkbox"/>
AIRWAY LARYNGEAL SILICONE 2 CUFF DISPOSABLE LMA UNIQUE IM# 10301626, Vendor Part #: HUD300000020		<input type="checkbox"/>
AIRWAY LARYNGEAL SILICONE 2.5 CUFF DISPOSABLE LMA UNIQUE IM# 10301627, Vendor Part #: HUD300000025		<input type="checkbox"/>
AIRWAY LARYNGEAL SILICONE 3 20- ML CUFF PILOT MASK		<input type="checkbox"/>

Buttons: Done, Cancel, Search: []

Figure 5. Doctor Name Input

The screenshot shows a dialog box titled "Enter Doctor's Name". It contains a text input field with the placeholder text "Please enter the doctor's name:". Below the input field are two buttons: "OK" and "Cancel".

Figure 6. Surgery Name Input



Enter Name of Surgery

Please enter the name of the surgery performed:

OK Cancel

Figure 7. Structure for Input Files



Confirm Files

Are these the files you expected?

Preview of Container File: /Users/Alex/Desktop/USC/ISE 509/Project 1/Workspace/hospital/data/in/general_information.xlsx:

Service	Container Name	Reference ID
0 BURNS	(NEW) BURNS ZIMMER DERMATOME	EQUSC0745
1 BURNS	AMALGATOME TRAY BURNS	EQUSC1726
2 BURNS	BIOPLASTY	NaN
3 BURNS	BRENNEN MESHER	NaN
4 BURNS	BURN PAN	EQUSC1941
5 BURNS	BURN PAN - PART 2	EQUSC0831
6 BURNS	BURNS BANDAGE SCISSORS PAN	EQUSC0180
7 BURNS	BURNS DELICATE PLASTIC TRAY	EQUSC0552
8 BURNS	BURNS ZIMMER DERMATOME	EQUSC0745
9 BURNS	HUMECA DERMATOME *LOANER	90020001312

Preview of Soft Goods File: /Users/Alex/Desktop/USC/ISE 509/Project 1/Workspace/hospital/data/in/soft_goods.xlsx:

	ITEM DESCRIPTION	VENDOR PART#
0	RETAINER VISCERAL	3204
1	PAD ELECTROSURGICAL GROUNDING UNVRSL PLT SPLIT...	9165
2	GLOVE-SURGICAL-LINER-MED.-50PR/CS-#42098	42098
3	GLOVE-SURGICAL-LINER-LARGE-50PR/CS-#62795	62795
4	SYSTEM DELIVERY CLOSED INJECTATE CO-SET+ IM# 1...	93610
5	GLOVE-SURGICAL-LINER-SM. - 50PR/CS-102401	102401
6	BARRIER SEPRAFILM 5X6" ADH-#4301-02	430102
7	BOTTLE BC BD BCTC 50 VL LYTIC/10 ANAER/F MED PLS	442021
8	BOTTLE BC 50 VL BD BCTC AERB 9K FX SYS + AEROB...	442023
9	RETRIEVER SUT 10.1IN HWSN DRL GD LGMNT STRL LF	71111579

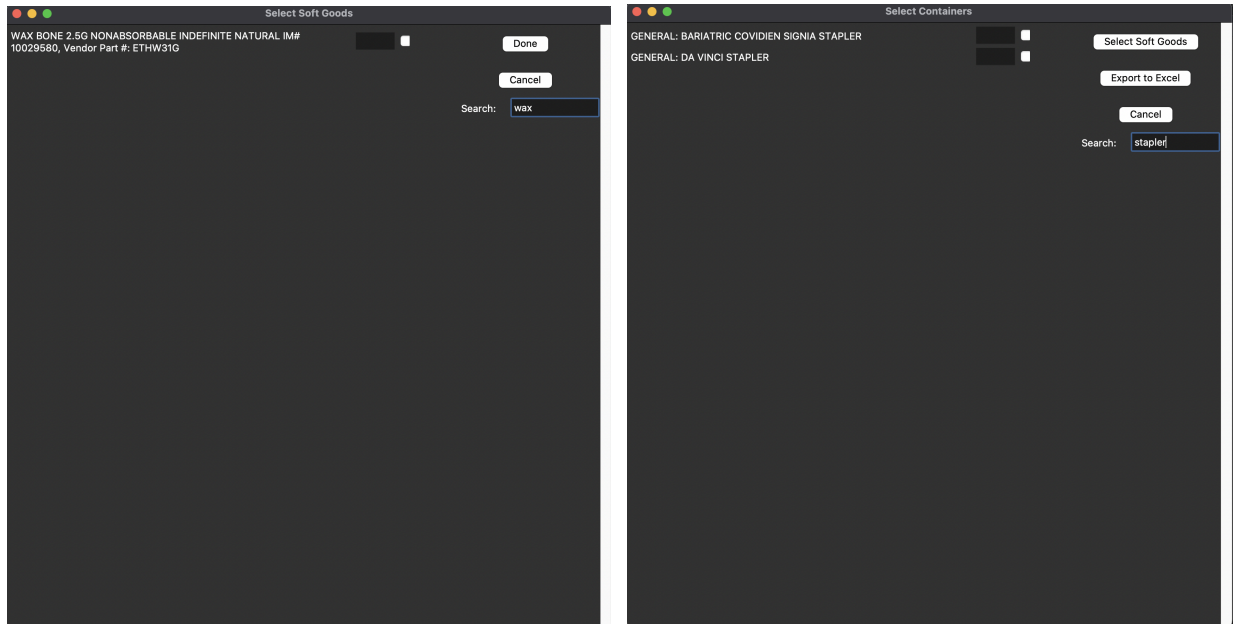
Select Correct Instrument Container File

Select Correct Soft Goods File

Confirm

Exit

Figure 8. Both the Soft Goods screen and Instruments screen allow for the search option to reduce choices



Installation

Installing the software is straightforward and involves the following steps:

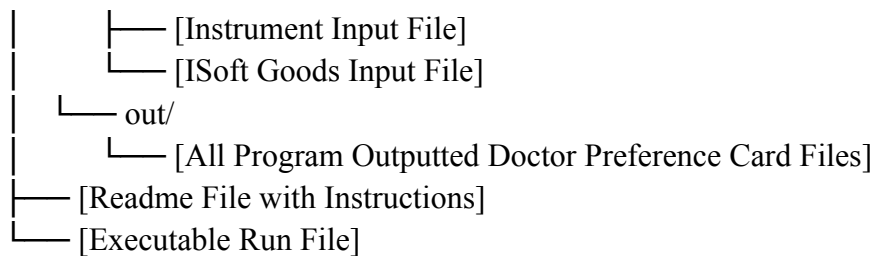
1. Download and Extract: Download the provided zip file, **SurgeryPreferenceCardv2**, and extract its contents to a desired location.
2. Move the Folder: Relocate the extracted folder to your preferred location, keeping all contents together.
3. Run the Executable: Navigate to the **app** folder and double-click the executable file, **run**, to launch the software.

Directory Structure

The directory structure of the software package is organized for clarity and ease of use:

SurgeryPreferenceCardv2/ (double click to unzip)

```
|— app/
|   |— program/
|       |— [Python Program]
|— data/
|   |— in/
```

Usage

The software offers various functionalities for managing preference cards:

1. Editing an Existing Preference Card:
 - Launch the Software: Double-click the executable file, **run**, inside the app folder.
 - Select an Input File: Choose an existing Excel file containing the preference card you wish to edit.
 - Modify Entries: Edit quantities, holds, or add new services, instruments, or soft goods.
 - Save Changes: Save changes to generate an updated preference card.
2. Adding New Entries:
 - Select a New File: Choose a new instrument or soft goods file with consistent column headers.
 - Add Entries: Add new services, instruments, or soft goods as needed.
 - Input Details: Specify quantities and hold statuses for the new entries.
3. Searching and Managing Entries:
 - Search Functionality: Use the search feature to find specific instruments or soft goods within their respective windows.
 - Persistent Soft Goods Window: Open, make selections, and close the soft goods window. Reopen it to find selections intact.

Input and Output Files

The software requires specific formats for input and output files:

- Input Files: Ensure input files for instruments and soft goods have consistent column headers. These files can be edited as long as the column names and file format remain unchanged (Figure 9 and 10).
- Output Files: Generated preference cards are saved as Excel sheets with the naming convention SurgeryName_Time_Date. Each doctor will have their own Excel file with surgeries as individual sheets for the sterile processing unit (Figure 11).

Figure 9. Example of excel file with instruments

Service	Container Name	Reference ID
BURNS	(NEW) BURNS ZIMMER DERMATOME	EQUSC0745
BURNS	AMALGATOME TRAY BURNS	EQUSC1726
BURNS	BIOPLASTY	
BURNS	BRENNEN MESHER	
BURNS	BURN PAN	EQUSC1941
BURNS	BURN PAN - PART 2	EQUSC0831
BURNS	BURNS BANDAGE SCISSORS PAN	EQUSC0180
BURNS	BURNS DELICATE PLASTIC TRAY	EQUSC0552
BURNS	BURNS ZIMMER DERMATOME	EQUSC0745
BURNS	HUMECA DERMATOME *LOANER	90020001312
BURNS	HUMECA MESHER (LOANER)	EQUSC0460
BURNS	LOANER MESHER WITH CUTTING WHEELS SN-7136	
BURNS	LOANER SKIN MESHER WITH WHEELS	
BURNS	LOANER ZIMMER DERMATOME	
BURNS	MESHER WITH CUTTING WHEELS (NEW)	EQUSC0461
BURNS	WATSON AND WECK PAN	EQUSC0738
CARDIAC	ABBOTT EPIC VALVE SIZER SET	
CARDIAC	ALL PURPOSE SUPPLEMENTAL TRAY	
CARDIAC	ALL PURPOSE TRAY	EQUSC0214
CARDIAC	ANKENEY RETRACTOR TRAY	
CARDIAC	AORTIC CLAMP TRAY	EQUSC0227

Figure 10. Example of excel file with soft goods

ITEM DESCRIPTION	VENDOR PART#
RETAINER VISCERAL	5204
PAD ELECTROSURGICAL GROUNDING UNVRSL FLT SPLIT CORD 9100 #91	5165
GLOVE-SURGICAL-LINER-MED-50PR/CS-#42098	2098
GLOVE-SURGICAL-LINER-LARGE-50PR/CS-#62795	2795
SYSTEM DELIVERY CLOSED INJECTATE CO-SET+ IMM 10029374	5810
GLOVE-SURGICAL-LINER-SM-50PR/CS-102401	02401
BARRIER SEPRFILM 5X8" ADH-#4301-02	30102
BOTTLE BC BD BCTC 50 VL LYTIC/10 ANAER/F MED PLS	42021
BOTTLE BC 50 VL BD BCTC AERB BK FX SYS + AEROB MED PLS	42023
RETRIEVER SUT 10.1IN W/WHN DRL GD LGMNT STRL LF	1111579
CANNULA OPHTHALMIC GRIEßHABER SHORT OD25 GA ODSEC 8 MM SOFT	865148630
PACK VITRECTOMY CONSTELLATION ENG/AUGE RUBBER OD20 GA ODSEC23	865750957
PACK VITRECTOMY CONSTELLATION ENG/AUGE V/LCITY GAS FILL	865751014
PROBE LASER PUREPOINT NITINOL PLASTIC GLASS 78 D L2 IN OD23	865751592
PROBE LASER PUREPOINT NITINOL PLASTIC GLASS 78 D L2 IN OD25	865751593
PACK SURGICAL CONSTELLATION OPHTHALMIC STERILE LATEX FREE DI	865751614
PACK OPHTHALMIC CONSTELLATION WIDE ANGLE ENDILLUMINATOR DIS	865751618
KNIFE OPHTHALMIC CLEARCUT STAINLESS STEEL POLYCARBONATE	865921540
MX EVAC-BONE CEMENT MIXER/FUME EVACUATOR	0206-015-000
BLADE LARYNGOSCOPE TITANIUM 3 DISPOSABLE LOPRO SPECTRUM	0270-0938
BLADE, GLIDESCOPE BLADE #4 NON STERILE	0270-0939
RETR RING 28.6X18.3CM DISP-COOPER SURG#3308G	3308G
ELASTIC STAYS 5MM STRL-COOPER#3311-8G	3311-8G
CEMENT-BONE-SURGICAL-FULL DOSE-10 PER PKG-#6191-1-010	6191-1-010
SPONGE NEURO 9X50MM-200EACS-AMER SURG.#63-07	63-07
CATHETER PA 110CM 8FR 5G C VP STD TD	777F8
SUTURE SOFSLK 0 16X18" BLK L/F-#X24-#5196	A186H
SLIPPERS PATIENT TERRYCLOTH ADULT FEMALE 5-9 REGULAR NONSKD LIGHT BLUE NOVAPLUS IMM 10053643	ABWV0103
SLIPPERS PATIENT TERRYCLOTH ADULT MALE 9-12 LARGE NONSKD BEIGE NOVAPLUS IMM 10053644	ABWV0104
SLIPPERS PATIENT ADULT XL 2 TREAD ANGLE CUT SMOOTH SLIP RESISTANT SIDE OUT LATEX FREE DISPOSABLE GRAY NOVAPLUS IMM 10053645	ABWV0106
SLIPPERS PATIENT TERRYCLOTH ADULT 2XL 1 TREAD SMOOTH SIDE OUT NONSKD MOSS GREEN NOVAPLUS IMM 10050264	ABWV0108
ADAPTER CATHETER 11/32IN 1/8-3/8IN PLASTIC LUER LOCK SYRINGE CONNECTOR POSITIVE GRIP RIDGE STERILE LATEX FREE 3/32IN TAPER IMM 10050211	ADD2219
PLUG CATHETER 1/8-3/8IN 7MM FLEXIBLE TUBE PROTECTOR TAPER TIP ANNULAR RIDGE STERILE LATEX FREE DISPOSABLE IMM 10050212	ADD2221
PACK PHACOEMULSIFICATION FUSION MAYO FLUIDIC TUBE SCREEN DRAPE CLOSED DRAIN BAG MANIFOLD DISPOSABLE IMM 10050220	ADVOP070

Figure 11. Example of doctor excel file with different surgery sheets

	A	B	C	D	E	F	G	H	I	J
	Quantity	Container Name	Item Description	Vendor Part #	Hold					
1	1	(NEW) BURNS ZIMMER DERMATOME			FALSE					
2	1	AMALGATOME TRAY BURNS			TRUE					
3	1	BIOPLASTY			FALSE					
4	1	ACUMED ACULOC 2 WRIST PLATING CONSIGNMENT TRAY			FALSE					
5	1	ACUMED ACUTRACK 2 CONSIGNMENT TRAY			FALSE					
6	2	ACUMED ELBOW PLATING SYSTEM CONSIGNMENT TRAY			TRUE					
7	1		"BAG, PAPER, BWN, #12, 7x4x14"" IM# 1 NONBPB12		FALSE					
8	2		"BAG, PAPER, BWN, #2, 4x2.5x8"" IM# 1C NONBPB2		FALSE					
9	1		"BAG, PAPER, BWN, #25, 8.5x5x18"" IM# NONBPB25		TRUE					
10	1		ADAPTER BLOOD COLLECTION MULTISAN B-D367290		FALSE					
11										
12										
13										
14										
15										
16										
17										
18										

Input File Headers (Case Sensitive)

To ensure smooth operation, input files must have the following headers:

- Instrument Container File: Service, Container Name, Reference ID (Figure 8)
- Softgoods File: ITEM DESCRIPTION, VENDOR PART# (Figure 9)

Output File Headers

The software generates output files with the following headers:

- Quantity, Container Name, Item Description, Vendor Part #, Hold (Figure 10)

Notes

For optimal performance, ensure the following:

- Ensure the input files have the correct column headers for the program to run smoothly.
- Preference card files to be edited should have the same column headers as those generated originally.
- The software generates output files in the output directory with the specified naming convention.

Support

For any issues or support, please contact Alex West at atwest@usc.edu or alextownewest@gmail.com.

Conclusion

The Hospital Preference Card Software successfully meets its objectives by providing a user-friendly interface for managing surgical preference cards. The software's flexibility in handling inputs and robust search and edit functionalities make it a valuable tool for ensuring surgical teams are well-prepared with the necessary instruments and soft goods. By simplifying the process of managing preference cards, the software helps to reduce the administrative workload on hospital staff, allowing them to focus more on patient care and surgical efficiency. The implementation of this software can lead to significant improvements in the organization and execution of surgical procedures, ultimately enhancing the overall quality of care provided to patients.