Pi Build Documentation

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# Hardware

* Raspberry Pi 4 (4GB or 8GB RAM)
* At least 32GB microSD card

# Software and OS Installation/Initialization

## Operating System Install

1. Format SD card using SD Card Formatting Tool
2. Image SD card using Raspberry Pi Imager
   1. Use Raspberry Pi OS with Desktop if a local display (monitor, touchscreen) is required
   2. Use Raspberry Pi OS Lite if no local display is required.
   3. Hit CTRL+SHIFT+X to access advanced options
      1. Enable SSH and set the password to “BuildTeam32550”
3. If using Desktop OS, follow startup prompts to:
   1. Set locality and timezone
   2. Connect to wireless network (if applicable)
   3. Update OS and Packages
   4. Reboot Pi when prompted
4. If using Raspberry Pi OS Lite:
   1. sudo apt update
   2. sudo apt upgrade

## OS Configuration

1. Use raspi-config (sudo raspi-config in a terminal session) to enable (under “Interface Options”):
   1. VNC Interface (if using Desktop OS)
   2. I2C Interface
2. If using Rasperry Pi OS Lite, use raspi-config to also:
   1. Set locality (timezone, wifi country code, etc.)

## Routed Wireless Access Point Configuration

1. In a terminal session, run the following commands:
   1. sudo apt install -y hostapd
   2. sudo systemctl unmask hostapd
   3. sudo systemctl enable hostapd
   4. sudo apt install -y dnsmasq
   5. sudo DEBIAN\_FRONTEND=noninteractive apt install -y netfilter-persistent iptables-persistent
   6. sudo nano /etc/dhcpcd.conf
      1. Add the following lines of code at the end of the file:

interface wlan0

static ip\_address=192.168.6.1/24

nohook wpa\_supplicant

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo mv /etc/dnsmasq.conf /etc/dnsmasq.conf.orig
  2. sudo nano /etc/dnsmasq.conf
     1. Add the following lines of code:

interface=wlan0 # Listening interface

dhcp-range=192.168.6.201,192.168.6.230,255.255.255.0,24h # Pool of IP addresses served via DHCP

domain=BuildTeam # Local wireless DNS domain

address=/gw.wlan/192.168.6.1 # Alias for this router

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo rfkill unblock wlan
  2. sudo nano /etc/hostapd/hostapd.conf
     1. Add the following lines of code

country\_code=US

interface=wlan0

ssid=VFCFalloutTrackerX

hw\_mode=g

channel=1

macaddr\_acl=0

auth\_algs=1

ignore\_broadcast\_ssid=0

wpa=2

wpa\_passphrase=BuildTeam32550

wpa\_key\_mgmt=WPA-PSK

wpa\_pairwise=TKIP

rsn\_pairwise=CCMP

* + 1. Change “X” in the ssid to the tracker number
    2. Save and Exit nano (ctrl+s then ctrl+x)

## Real-Time Clock Configuration

Detailed instructions can be found at:

[Overview | Adding a Real Time Clock to Raspberry Pi | Adafruit Learning System](https://learn.adafruit.com/adding-a-real-time-clock-to-raspberry-pi)

1. In a terminal session, run the following commands:
   1. sudo apt-get install -y python-smbus i2c-tools
   2. sudo i2cdetect -y 1
   3. sudo nano /boot/config.txt
      1. Add the following line to the end of the file

dtoverlay=i2c-rtc,ds3231

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo reboot

1. Restart the session and run the following terminal commands:
   1. sudo i2cdetect -y 1
      1. verify that “UU” is now where “68” used to reside in the results
   2. sudo apt-get -y remove fake-hwclock
   3. sudo update-rc.d -f fake-hwclock remove
   4. sudo systemctl disable fake-hwclock
   5. sudo nano /lib/udev/hwclock-set
      1. Comment out the following lines by adding “#”

#if [ -e /run/systemd/system ] ; then

# exit 0

#fi

#/sbin/hwclock --rtc=$dev --systz –badyear

#/sbin/hwclock --rtc=$dev –systz

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo hwclock -r
     1. verify that the clock time is accurate

## Install Mosquitto MQTT Broker

1. In a terminal session, run the following commands:
   1. sudo apt install -y mosquitto mosquitto-clients
   2. sudo systemctl enable mosquitto.service
   3. sudo nano /etc/mosquitto/mosquitto.conf
      1. Add the following line to the end of the file:

allow\_anonymous true

listener 1883

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo systemctl restart mosquitto.service

## Install Node-RED

Detailed instructions can be found at:

<https://nodered.org/docs/getting-started/raspberrypi>

1. In a terminal session, run the following commands:
   1. bash <(curl -sL https://raw.githubusercontent.com/node-red/linux-installers/master/deb/update-nodejs-and-nodered) --node16 --confirm-pi --confirm-root --confirm-install
   2. node-red-pi --max-old-space-size=256
      1. Then, exit Node-Red with ctrl+c
   3. sudo systemctl enable nodered.service
   4. sudo systemctl start nodered.service

## Install MariaDB + phpMyAdmin

Detailed instructions can be found at:

[How to Install MariaDB on Raspberry Pi? (MySQL Server) – RaspberryTips](https://raspberrytips.com/install-mariadb-raspberry-pi/#How_to_install_MariaDB_on_Raspbian)

1. In a terminal session, run the following commands
   1. sudo apt install -y mariadb-server
   2. sudo mysql\_secure\_installation
      1. Set a root password (BuildTeam32550)
      2. answer “Y” to all questions except:
         1. Disallow root login remotely
   3. sudo apt install -y apache2
   4. sudo apt install -y php libapache2-mod-php
   5. sudo apt install -y phpmyadmin
      1. when prompted, select “apache2” for web server configuration
         1. select by pressing space bar, then enter
      2. when prompted to configure the database for db-common, select ‘no’
   6. sudo mysql
      1. Then, enter the following commands line-by-line:
      2. CREATE USER 'admin'@localhost IDENTIFIED BY 'BuildTeam32550';
      3. GRANT ALL PRIVILEGES ON \*.\* TO 'admin'@localhost WITH GRANT OPTION;
      4. FLUSH PRIVILEGES;
   7. Exit MariaDB (ctrl+c)

## Install Firefox

1. In a terminal session, run the following commands
   1. sudo apt install -y firefox-esr
      1. In Firefox (via VNC or desktop), add AutoFullscreen from add-on library
   2. sudo apt install -y xdotool
   3. sudo nano /home/pi/Desktop/fallout.sh
      1. Insert the following in the text editor:

sleep 5

/usr/bin/firefox http://localhost:1880/ui

* + 1. Save and Exit nano (ctrl+s then ctrl+x)
  1. sudo chmod +x /home/pi/Desktop/fallout.sh
  2. sudo nano /etc/xdg/lxsession/LXDE-pi/autostart
     1. Insert the following in the text editor:

@lxterminal --command /home/pi/Desktop/fallout.sh

* + 1. Save and Exit nano (ctrl+s then ctrl+x)

# Software Configuration

## MariaDB

1. Configure MariaDB using phpMyAdmin by navigating to <ip address>/phpMyAdmin
2. Add service account for Node-RED:
   1. Go to “User Accounts” Tab
   2. Create a new user “sanodered” with password “buildteam”
      1. Check all “Data” rights under global privileges
   3. Click “go” to create the user
3. Import SQL Database Structure:
   1. Click on Server:localhose:3306 in the top tree
   2. Open the SQL tab (2nd tab on top tab bar)
   3. Copy/paste the text from Appendix A into the Query box.
   4. Click Go

## Node-RED

1. Navigate to Node-RED using a web browser: http://<ip-address>:1880
2. Install additional nodes to support functionality:
   1. Use the sandwich menu in the upper right, select “Manage Pallet”
   2. Click the “Install” Tab
   3. Search for and install the following nodes:
      1. node-red-contrib-cip-ethernet-ip
      2. node-red-contrib-string
      3. node-red-dashboard
      4. node-red-contrib-ui-statechart
      5. node-red-node-mysql
      6. node-red-node-ui-table
3. Import Node-RED Flow:
   1. Use the sandwich menu in the upper right, select “Import”
   2. Copy/Paste the configuration text from Appendix B into the text box.
   3. Click Import
4. Update the MySQL connection credentials
   1. Under the “Data Collection” flow, Double-click on any orange “MySQL” node
   2. Click the “edit” button to the right of the database selection
   3. Add the username and password info for the service account, then click “update” then “done”
   4. Click Deploy

# Appendix A: SQL Code to Build Fallout Database

-- phpMyAdmin SQL Dump

-- version 4.6.6deb5

-- https://www.phpmyadmin.net/

--

-- Host: localhost:3306

-- Generation Time: Dec 02, 2021 at 12:45 PM

-- Server version: 10.3.29-MariaDB-0+deb10u1

-- PHP Version: 7.3.29-1~deb10u1

SET SQL\_MODE = "NO\_AUTO\_VALUE\_ON\_ZERO";

SET time\_zone = "+00:00";

/\*!40101 SET @OLD\_CHARACTER\_SET\_CLIENT=@@CHARACTER\_SET\_CLIENT \*/;

/\*!40101 SET @OLD\_CHARACTER\_SET\_RESULTS=@@CHARACTER\_SET\_RESULTS \*/;

/\*!40101 SET @OLD\_COLLATION\_CONNECTION=@@COLLATION\_CONNECTION \*/;

/\*!40101 SET NAMES utf8mb4 \*/;

--

-- Database: `fallout`

--

-- --------------------------------------------------------

--

-- Table structure for table `defectcode`

--

CREATE TABLE `defectcode` (

  `iddefectcode` int(11) NOT NULL,

  `description` text NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--

-- Dumping data for table `defectcode`

--

INSERT INTO `defectcode` (`iddefectcode`, `description`) VALUES

(1, 'Bead Nicks'),

(2, 'Bead Scratches'),

(3, 'Pitting'),

(4, 'Bead/Ramp Chatter'),

(5, 'Insufficient Polish'),

(6, 'Flat Bead'),

(7, 'Ramp Nicks'),

(8, 'Ramp Scratches'),

(9, 'Ramp Tool Lines'),

(10, 'Other');

-- --------------------------------------------------------

--

-- Table structure for table `defects`

--

CREATE TABLE `defects` (

  `id\_defects` int(11) NOT NULL,

  `datetime` datetime NOT NULL DEFAULT current\_timestamp(),

  `orderid` int(11) NOT NULL,

  `defectcode` int(11) NOT NULL,

  `defectcount` int(11) DEFAULT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--

-- Table structure for table `orderdata`

--

CREATE TABLE `orderdata` (

  `idorderdata` int(11) NOT NULL,

  `ordernumber` int(11) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--

-- Indexes for table `defectcode`

--

ALTER TABLE `defectcode`

  ADD PRIMARY KEY (`iddefectcode`),

  ADD KEY `iddefectcode` (`iddefectcode`);

--

-- Indexes for table `defects`

--

ALTER TABLE `defects`

  ADD PRIMARY KEY (`id\_defects`),

  ADD KEY `constrdefectcode` (`defectcode`);

--

-- Indexes for table `orderdata`

--

ALTER TABLE `orderdata`

  ADD PRIMARY KEY (`idorderdata`);

--

-- AUTO\_INCREMENT for dumped tables

--

--

-- AUTO\_INCREMENT for table `defectcode`

--

ALTER TABLE `defectcode`

  MODIFY `iddefectcode` int(11) NOT NULL AUTO\_INCREMENT, AUTO\_INCREMENT=19;

--

-- AUTO\_INCREMENT for table `defects`

--

ALTER TABLE `defects`

  MODIFY `id\_defects` int(11) NOT NULL AUTO\_INCREMENT, AUTO\_INCREMENT=5310;

--

-- AUTO\_INCREMENT for table `orderdata`

--

ALTER TABLE `orderdata`

  MODIFY `idorderdata` int(11) NOT NULL AUTO\_INCREMENT, AUTO\_INCREMENT=16;

--

-- Constraints for dumped tables

--

--

-- Constraints for table `defects`

--

ALTER TABLE `defects`

  ADD CONSTRAINT `constrdefectcode` FOREIGN KEY (`defectcode`) REFERENCES `defectcode` (`iddefectcode`);

/\*!40101 SET CHARACTER\_SET\_CLIENT=@OLD\_CHARACTER\_SET\_CLIENT \*/;

/\*!40101 SET CHARACTER\_SET\_RESULTS=@OLD\_CHARACTER\_SET\_RESULTS \*/;

/\*!40101 SET COLLATION\_CONNECTION=@OLD\_COLLATION\_CONNECTION \*/;

# Appendix B: Node-RED Configuration

[{"id":"bfe7203a4abe18d4","type":"tab","label":"Data Collection","disabled":false,"info":""},{"id":"1826d65c.100802","type":"MySQLdatabase","name":"","host":"localhost","port":"3306","db":"fallout","tz":"","charset":"UTF8"},{"id":"4a6be555.30a974","type":"mqtt-broker","name":"","broker":"localhost","port":"1883","clientid":"","usetls":false,"compatmode":false,"keepalive":"60","cleansession":true,"birthTopic":"","birthQos":"0","birthPayload":"","closeTopic":"","closeQos":"0","closePayload":"","willTopic":"","willQos":"0","willPayload":""},{"id":"ee44d9b2.f6dd18","type":"ui\_group","name":"Defect Type","tab":"fd36b638.73e9e8","order":4,"disp":true,"width":"6","collapse":false,"className":""},{"id":"5b67cf0b.8c52f","type":"ui\_group","name":"Corrections","tab":"fd36b638.73e9e8","order":3,"disp":true,"width":"6","collapse":false},{"id":"af089470.a74698","type":"ui\_group","name":"TIME","tab":"b8b9d847.715888","order":2,"disp":true,"width":"6","collapse":false},{"id":"6a106682.86a648","type":"ui\_group","name":"Read Me","tab":"b8b9d847.715888","order":1,"disp":false,"width":"6","collapse":false},{"id":"d5b7758f.16c638","type":"ui\_group","name":"End of Order Controls","tab":"fd36b638.73e9e8","order":6,"disp":false,"width":"6","collapse":false},{"id":"85569d8b.6b213","type":"ui\_group","name":"Start Order Controls","tab":"fd36b638.73e9e8","order":2,"disp":true,"width":"6","collapse":false},{"id":"fd36b638.73e9e8","type":"ui\_tab","name":"VFC 312 \"A\"","icon":"sort","order":3,"disabled":false,"hidden":false},{"id":"b8b9d847.715888","type":"ui\_tab","name":"READ ME","icon":"mdi-info-variant","order":4,"disabled":false,"hidden":false},{"id":"f142a7c562cbc452","type":"ui\_base","theme":{"name":"theme-custom","lightTheme":{"default":"#0094CE","baseColor":"#0094CE","baseFont":"-apple-system,BlinkMacSystemFont,Segoe UI,Roboto,Oxygen-Sans,Ubuntu,Cantarell,Helvetica Neue,sans-serif","edited":true,"reset":false},"darkTheme":{"default":"#097479","baseColor":"#004d9e","baseFont":"-apple-system,BlinkMacSystemFont,Segoe UI,Roboto,Oxygen-Sans,Ubuntu,Cantarell,Helvetica Neue,sans-serif","edited":true,"reset":false},"customTheme":{"name":"Swagelok","default":"#4B7930","baseColor":"#004d9e","baseFont":"Arial,Arial,Helvetica,sans-serif","reset":false},"themeState":{"base-color":{"default":"#4B7930","value":"#004d9e","edited":true},"page-titlebar-backgroundColor":{"value":"#004d9e","edited":false},"page-backgroundColor":{"value":"#333333","edited":true},"page-sidebar-backgroundColor":{"value":"#3d3d3d","edited":true},"group-textColor":{"value":"#d2d6f2","edited":true},"group-borderColor":{"value":"#555555","edited":false},"group-backgroundColor":{"value":"#333333","edited":false},"widget-textColor":{"value":"#eeeeee","edited":false},"widget-backgroundColor":{"value":"#004d9e","edited":false},"widget-borderColor":{"value":"#333333","edited":false},"base-font":{"value":"Arial,Arial,Helvetica,sans-serif"}},"angularTheme":{"primary":"indigo","accents":"blue","warn":"red","background":"grey","palette":"light"}},"site":{"name":"Node-RED Dashboard","hideToolbar":"false","allowSwipe":"false","lockMenu":"false","allowTempTheme":"true","dateFormat":"DD/MM/YYYY","sizes":{"sx":48,"sy":48,"gx":6,"gy":6,"cx":6,"cy":6,"px":0,"py":0}}},{"id":"371613fa775ef48b","type":"ui\_spacer","name":"spacer","group":"17a30eef.35b7e9","order":5,"width":1,"height":1},{"id":"b52357d08906600a","type":"ui\_spacer","name":"spacer","group":"","order":3,"width":1,"height":1},{"id":"2b5b55fbf9eb4b1a","type":"ui\_group","name":"Status","tab":"fd36b638.73e9e8","order":4,"disp":true,"width":"6","collapse":false},{"id":"de5c6ff7172b5f55","type":"ui\_group","name":"Percentages of Defects / Total Order Parts","tab":"","order":2,"disp":true,"width":"14","collapse":false},{"id":"3acb52234006f052","type":"ui\_spacer","name":"spacer","group":"17a30eef.35b7e9","order":5,"width":1,"height":1},{"id":"efc788b795df3b74","type":"ui\_spacer","name":"spacer","group":"","order":3,"width":1,"height":1},{"id":"8f7203b0092dfd9d","type":"ui\_group","name":"Percentages of Defects / Total Order Parts","tab":"","order":2,"disp":true,"width":"14","collapse":false},{"id":"0d41fd3d438eb6ac","type":"mysql","z":"bfe7203a4abe18d4","mydb":"1826d65c.100802","name":"fallout","x":810,"y":160,"wires":[["068b8ad79b060ad5"]]},{"id":"332620f09f24f2ec","type":"mqtt in","z":"bfe7203a4abe18d4","name":"","topic":"falloutdash/button","qos":"0","datatype":"auto","broker":"4a6be555.30a974","nl":false,"rap":false,"x":110,"y":140,"wires":[["2bdaa6701a4c8d83"]]},{"id":"abcc9aca4bf6802d","type":"string","z":"bfe7203a4abe18d4","name":"","methods":[{"name":"append","params":[{"type":"str","value":"INSERT INTO fallout.defects(orderid,defectcode,defectcount) VALUES("}]},{"name":"append","params":[{"type":"flow","value":"activeorder"}]},{"name":"append","params":[{"type":"str","value":", "}]},{"name":"append","params":[{"type":"msg","value":"payload"}]},{"name":"append","params":[{"type":"str","value":","}]},{"name":"append","params":[{"type":"str","value":"1"}]},{"name":"append","params":[{"type":"str","value":")"}]}],"prop":"","propout":"topic","object":"str","objectout":"msg","x":690,"y":160,"wires":[["0d41fd3d438eb6ac"]]},{"id":"db8bcaaccb9df25d","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"topic","pt":"msg","to":"","tot":"str"},{"t":"set","p":"last\_defect","pt":"flow","to":"payload","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":540,"y":160,"wires":[["abcc9aca4bf6802d"]]},{"id":"d3aa971790ae0c15","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":2,"width":0,"height":0,"name":"","label":"Bead Nicks","format":"{{msg.payload}}","layout":"row-spread","className":"","x":890,"y":1300,"wires":[]},{"id":"7962865b0775a919","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[0].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1300,"wires":[["d3aa971790ae0c15"]]},{"id":"2d48ed703ed1f79b","type":"ui\_button","z":"bfe7203a4abe18d4","name":"","group":"5b67cf0b.8c52f","order":4,"width":3,"height":1,"passthru":false,"label":"+","tooltip":"","color":"","bgcolor":"","className":"","icon":"","payload":"1","payloadType":"num","topic":"","topicType":"str","x":270,"y":300,"wires":[["3c4b1224fb39d9df"]]},{"id":"231a1fb43b9c0af3","type":"ui\_button","z":"bfe7203a4abe18d4","name":"","group":"5b67cf0b.8c52f","order":3,"width":3,"height":1,"passthru":false,"label":"-","tooltip":"","color":"","bgcolor":"","icon":"","payload":"-1","payloadType":"num","topic":"","x":270,"y":340,"wires":[["3c4b1224fb39d9df"]]},{"id":"da5a6d1ef6adcf40","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"correction\_selected","pt":"flow","to":"payload","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":560,"y":220,"wires":[[]]},{"id":"42f89947733ff9c8","type":"string","z":"bfe7203a4abe18d4","name":"","methods":[{"name":"append","params":[{"type":"str","value":"INSERT INTO fallout.defects(orderid,defectcode,defectcount) VALUES("}]},{"name":"append","params":[{"type":"flow","value":"activeorder"}]},{"name":"append","params":[{"type":"str","value":","}]},{"name":"append","params":[{"type":"flow","value":"correction\_selected"}]},{"name":"append","params":[{"type":"str","value":","}]},{"name":"append","params":[{"type":"msg","value":"payload"}]},{"name":"append","params":[{"type":"str","value":")"}]}],"prop":"","propout":"topic","object":"str","objectout":"msg","x":530,"y":320,"wires":[["cc49cbba21c63c27"]]},{"id":"cc49cbba21c63c27","type":"mysql","z":"bfe7203a4abe18d4","mydb":"1826d65c.100802","name":"fallout","x":650,"y":320,"wires":[["068b8ad79b060ad5"]]},{"id":"ab3f33a500050e37","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":3,"width":0,"height":0,"name":"","label":"Bead Scratches","format":"{{msg.payload}}","layout":"row-spread","className":"","x":900,"y":1340,"wires":[]},{"id":"bd5601d94086db5a","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[1].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1340,"wires":[["ab3f33a500050e37"]]},{"id":"5236681e24f2fc18","type":"link in","z":"bfe7203a4abe18d4","name":"","links":["068b8ad79b060ad5"],"x":95,"y":1280,"wires":[["73bdc26e522901ef","53d534e8b1d07083","1ffb335b1b8f2c39"]]},{"id":"068b8ad79b060ad5","type":"link out","z":"bfe7203a4abe18d4","name":"","links":["5236681e24f2fc18","c1e70433.a41f78"],"x":1015,"y":160,"wires":[]},{"id":"2070379d47ba5722","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":4,"width":0,"height":0,"name":"","label":"Pitting","format":"{{msg.payload}}","layout":"row-spread","className":"","x":870,"y":1380,"wires":[]},{"id":"ac0c2bac6d82ccdb","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[2].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1380,"wires":[["2070379d47ba5722"]]},{"id":"f232673d3879695a","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":5,"width":0,"height":0,"name":"","label":"Bead/Ramp Chatter","format":"{{msg.payload}}","layout":"row-spread","className":"","x":920,"y":1420,"wires":[]},{"id":"16c41da523a5f58a","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[3].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1420,"wires":[["f232673d3879695a"]]},{"id":"5aa80dfb4442e69c","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":7,"width":0,"height":0,"name":"","label":"Flat Bead","format":"{{msg.payload}}","layout":"row-spread","className":"","x":880,"y":1500,"wires":[]},{"id":"8633d467ad53adae","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[5].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1500,"wires":[["5aa80dfb4442e69c"]]},{"id":"d67813e88889694c","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":8,"width":0,"height":0,"name":"","label":"Ramp Nicks","format":"{{msg.payload}}","layout":"row-spread","className":"","x":890,"y":1540,"wires":[]},{"id":"41bce8081dbe76ea","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[6].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1540,"wires":[["d67813e88889694c"]]},{"id":"9c4acada8f9ed129","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":9,"width":0,"height":0,"name":"","label":"Ramp 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Push","info":"","x":130,"y":100,"wires":[]},{"id":"77a5271fe70616d9","type":"comment","z":"bfe7203a4abe18d4","name":"Starting New Order","info":"","x":110,"y":500,"wires":[]},{"id":"9ae459ce2789db54","type":"comment","z":"bfe7203a4abe18d4","name":"Update Dashboard Counts","info":"","x":190,"y":1180,"wires":[]},{"id":"5ace10e58bd9662d","type":"inject","z":"bfe7203a4abe18d4","name":"","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"60","crontab":"","once":false,"onceDelay":0.1,"topic":"","payload":"","payloadType":"date","x":1230,"y":40,"wires":[["3efef1ec2a83507c"]]},{"id":"d909a619c855decf","type":"ui\_text","z":"bfe7203a4abe18d4","group":"af089470.a74698","order":1,"width":0,"height":0,"name":"Correction Text","label":"Current Time","format":"{{msg.payload}}","layout":"col-center","x":1240,"y":120,"wires":[]},{"id":"3efef1ec2a83507c","type":"function","z":"bfe7203a4abe18d4","name":"","func":"var datetime = new Date(msg.payload).toISOString()\nvar newmsg = {payload: datetime};\nreturn newmsg;","outputs":1,"noerr":0,"initialize":"","finalize":"","x":1220,"y":80,"wires":[["d909a619c855decf"]]},{"id":"abb3cf471b291a64","type":"comment","z":"bfe7203a4abe18d4","name":"Info Screen","info":"Info Screen","x":690,"y":40,"wires":[]},{"id":"e1e75d9455d69aa4","type":"ui\_ui\_control","z":"bfe7203a4abe18d4","name":"Display Tab","events":"change","x":1010,"y":40,"wires":[[]]},{"id":"dc1b56365df0a5e2","type":"inject","z":"bfe7203a4abe18d4","name":"","props":[{"p":"payload"},{"p":"topic","vt":"str"}],"repeat":"180","crontab":"","once":true,"onceDelay":0.1,"topic":"","payload":"{\"tab\":\"Defects (Shift)\"}","payloadType":"json","x":850,"y":40,"wires":[["e1e75d9455d69aa4"]]},{"id":"150d859016c848ec","type":"ui\_template","z":"bfe7203a4abe18d4","group":"6a106682.86a648","name":"Data Monitoring","order":1,"width":0,"height":0,"format":"<style>\nh1 {text-align: center;};\np {text-align: center;};\ndiv {text-align: center;};\n</style>\n\n<body>\n<h1>Data Monitoring</h1>\n<p>This dashboard will be used to gather defects of VCR Beads </p>\n</body>","storeOutMessages":true,"fwdInMessages":true,"resendOnRefresh":true,"templateScope":"local","className":"","x":860,"y":80,"wires":[[]]},{"id":"6713411c284108c3","type":"change","z":"bfe7203a4abe18d4","name":"update shift\_counter","rules":[{"t":"set","p":"shift\_counter","pt":"flow","to":"payload","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":660,"y":420,"wires":[["068b8ad79b060ad5","b04b0f0a14ec0118"]]},{"id":"6840db19c71bd8f1","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"payload[4].SUM(defectcount)","tot":"msg"}],"action":"","property":"","from":"","to":"","reg":false,"x":720,"y":1460,"wires":[["82c013d57d9b8e17"]]},{"id":"82c013d57d9b8e17","type":"ui\_text","z":"bfe7203a4abe18d4","group":"ee44d9b2.f6dd18","order":6,"width":0,"height":0,"name":"","label":"Insufficient Polish","format":"{{msg.payload}}","layout":"row-spread","className":"","x":910,"y":1460,"wires":[]},{"id":"b04b0f0a14ec0118","type":"debug","z":"bfe7203a4abe18d4","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":850,"y":420,"wires":[]},{"id":"a898f6e2d2e5e269","type":"ui\_dropdown","z":"bfe7203a4abe18d4","name":"","label":"","tooltip":"","place":"Select option","group":"5b67cf0b.8c52f","order":2,"width":0,"height":0,"passthru":true,"multiple":false,"options":[{"label":"Bead Nicks","value":1,"type":"num"},{"label":"Bead Scratches","value":2,"type":"num"},{"label":"Pitting","value":3,"type":"num"},{"label":"Bead/Ramp Chatter","value":4,"type":"num"},{"label":"Insufficient Polish","value":5,"type":"num"},{"label":"Flat Bead","value":6,"type":"num"},{"label":"Ramp Nicks","value":7,"type":"num"},{"label":"Ramp Scratches","value":8,"type":"num"},{"label":"Ramp Tool 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Order","tooltip":"","color":"","bgcolor":"","className":"","icon":"","payload":"activeorder","payloadType":"flow","topic":"","topicType":"str","x":150,"y":920,"wires":[["12b36f188cd8a0cb"]]},{"id":"4f1700e463b8f51e","type":"switch","z":"bfe7203a4abe18d4","name":"","property":"payload","propertyType":"msg","rules":[{"t":"eq","v":"Yes","vt":"str"},{"t":"eq","v":"No","vt":"str"}],"checkall":"true","repair":false,"outputs":2,"x":470,"y":920,"wires":[["2b92f5127da5a039"],[]]},{"id":"7801dd2fe1333436","type":"string","z":"bfe7203a4abe18d4","name":"","methods":[{"name":"append","params":[{"type":"str","value":"SELECT defectcode, SUM(defectcount) FROM defects WHERE orderid="}]},{"name":"append","params":[{"type":"flow","value":"activeorder"}]},{"name":"append","params":[{"type":"str","value":" GROUP BY defectcode"}]}],"prop":"","propout":"topic","object":"str","objectout":"msg","x":370,"y":1340,"wires":[["298ba05a3a75eeda"]]},{"id":"b973835e43b29202","type":"debug","z":"bfe7203a4abe18d4","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":710,"y":1700,"wires":[]},{"id":"7285605b6dcb20c4","type":"ui\_toast","z":"bfe7203a4abe18d4","position":"prompt","displayTime":"3","highlight":"","sendall":true,"outputs":1,"ok":"Ok","cancel":"Cancel","raw":false,"className":"","topic":"Enter New Order Number","name":"New order # 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ORDER","tot":"str"}],"action":"","property":"","from":"","to":"","reg":false,"x":920,"y":880,"wires":[["068b8ad79b060ad5","b9ba636df4b2c17f","0a29b7b1b18db5c8"]]},{"id":"fbd300a0183e02d7","type":"debug","z":"bfe7203a4abe18d4","name":"","active":true,"tosidebar":true,"console":false,"tostatus":false,"complete":"false","statusVal":"","statusType":"auto","x":450,"y":560,"wires":[]},{"id":"1a2bec3dd8977abb","type":"comment","z":"bfe7203a4abe18d4","name":"End Active Order","info":"","x":120,"y":880,"wires":[]},{"id":"3d13cec5c429064d","type":"ui\_button","z":"bfe7203a4abe18d4","name":"","group":"85569d8b.6b213","order":1,"width":0,"height":0,"passthru":false,"label":"Start New Order","tooltip":"","color":"","bgcolor":"","className":"","icon":"","payload":"Order 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saving?","x":180,"y":720,"wires":[["b497d4fbd7e121d9"]]},{"id":"b497d4fbd7e121d9","type":"switch","z":"bfe7203a4abe18d4","name":"","property":"payload","propertyType":"msg","rules":[{"t":"eq","v":"Yes","vt":"str"},{"t":"else"}],"checkall":"true","repair":false,"outputs":2,"x":350,"y":680,"wires":[["07f88bc1115152b3"],[]]},{"id":"5eae84600fcf2530","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"set","p":"payload","pt":"msg","to":"activeorder","tot":"flow"}],"action":"","property":"","from":"","to":"","reg":false,"x":130,"y":660,"wires":[["3a48439120d02a02"]]},{"id":"07f88bc1115152b3","type":"change","z":"bfe7203a4abe18d4","name":"","rules":[{"t":"change","p":"payload","pt":"msg","from":"Yes","fromt":"str","to":"Order #:","tot":"str"}],"action":"","property":"","from":"","to":"","reg":false,"x":480,"y":760,"wires":[["7285605b6dcb20c4"]]},{"id":"858a43d7edcb91f1","type":"ui\_toast","z":"bfe7203a4abe18d4","position":"top 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