
10

TVL – Electrical Installation and Maintenance (EIM)

**Quarter 1 – Module 6
Connections/Diagrams of GFCI
(Weeks 6 & 7)**





What I Need to Know

At this level, different diagrams involving GFCIs will be introduced to you. The diagrams of the various GFCI devices will be presented and will be explained on how to use them in the electrical system. Remember that GFCIs has many terminals, you must familiarize all of them.

The lesson comprises the following:

- Schematic Diagram of Single Pole and Double Pole GFCI Breaker Connected to the Source
- Schematic Diagram of GFCI Receptacle Outlet Added to Branch Circuit
- Schematic Diagram of Multiple GFCI Receptacle Outlet in a Circuit
- Schematic Diagram of Ordinary Outlet Connected to GFCI Receptacle Outlet in a Circuit
- Schematic Diagrams of GFCI Combo Switch in a Circuit

To perform the different activities for this module, you must prepare the following drawing materials:

- ruler
- multi-color sign pen
- pencil
- red, blue, black, and green ball peen
- long white bond paper

After going through this module, you are expected to:

1. know, familiarize, and draw the wiring diagram of the connections of different types of GFCIs;
2. connect GFCI devices in a diagram correctly; and
3. construct a wiring diagram of the different types of GFCI.



What I Know

Please do not forget to write the following on your answer sheet:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

Name of Activity: What I Know Date: _____

Directions: Read each of the following statements carefully and choose the letter of the correct answer.

1. The built-in white wire of the GFCI breaker is the _____.
A. Line terminal C. Ground terminal
B. Neutral terminal D. Load terminal
 2. Can be manufactured built-in, added, or as a replacement of the existing normal circuit breaker in the panel.
A. GFCI breaker C. GFCI cord
B. GFCI receptacle D. GFCI portable
 3. GFCI breaker terminal that is connected from the main distribution board.
A. Output terminal L1 C. Input terminal L2
B. Output terminal L2 D. Ground
 4. The input or line side of the GFCI breaker is connected from/to _____.
A. Lighting receptacle C. House circuit
B. Receptacle outlet D. Source
 5. The input neutral terminal of the GFCI breaker should be connected to _____.
A. Neutral bus bar of the panel C. Neutral terminal of the load
B. Ground bus bar of the panel D. Line terminal of the load
 6. The two wires at the back of the GFCI combo are called the _____ that controls the load.
A. Input terminal C. Switch output
B. Line 1 terminal D. Switch input
 7. It is a tool used to remove insulations of #10 AWG or smaller size electrical wires?
A. Wire stripper C. Cutter pliers
B. Longnose pliers D. Diagonal pliers
 8. It is a color-coded wire connector that is used to connect two or smaller wires?
A. Butt connector C. Piercing connector
B. Lug connector D. Wire nut connector
 9. A downstream receptacle outlet should be connected to what terminal of the GFCI receptacle?
A. Input terminals C. Ground terminal
B. Load terminals D. Neutral terminal
 10. What terminal should be connected all together from devices to devices or appliances?
A. Line C. Load
B. Neutral D. Ground

Lesson

1

Wiring Diagram of the Different Types of GFCI



What's In

Aside from the wiring connections of a non-GFCI circuit breaker and outlets, different kinds of switches, and bulbs, recall the external parts and terminals of GFCI breaker, GFCI receptacle, and GFCI combo for these are the requisites of this lesson. Here, we will be dealing with the different wiring connections of these three GFCIs only. Below are the parts and label of the terminals of the GFCIs and where they are connected.

A. GFCI breaker

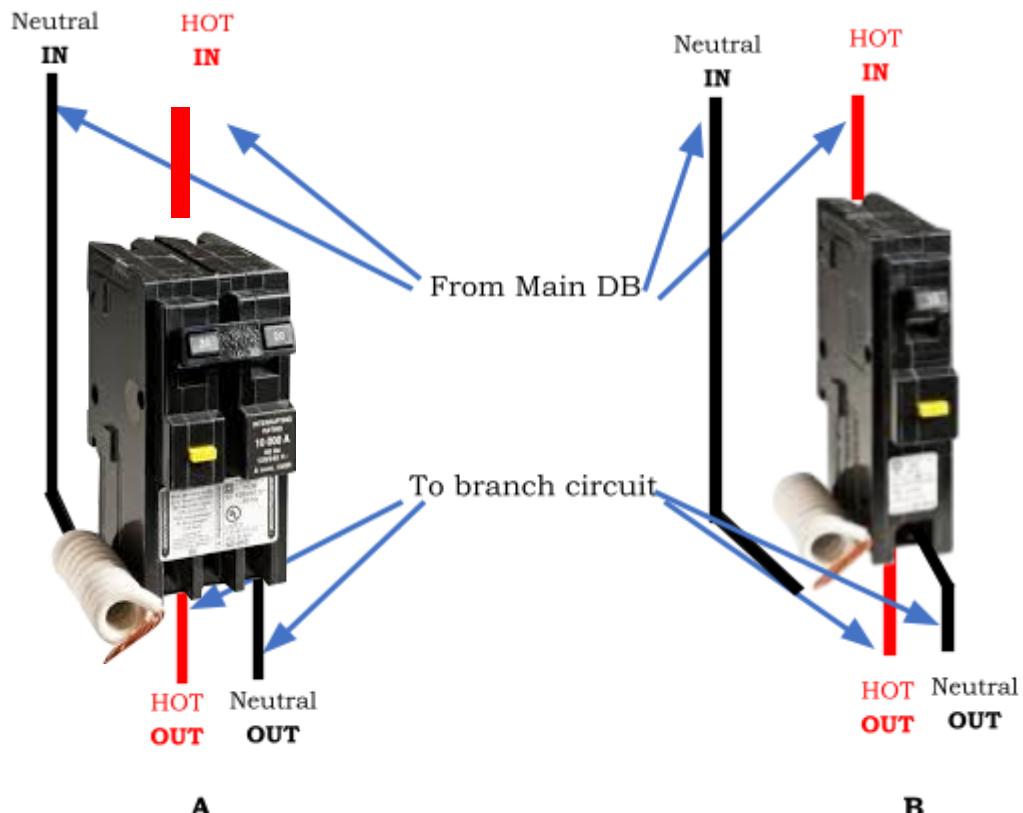


Fig. 5.2: External parts of A. Double pole GFCI breaker and B. Single pole breaker

B. GFCI breaker

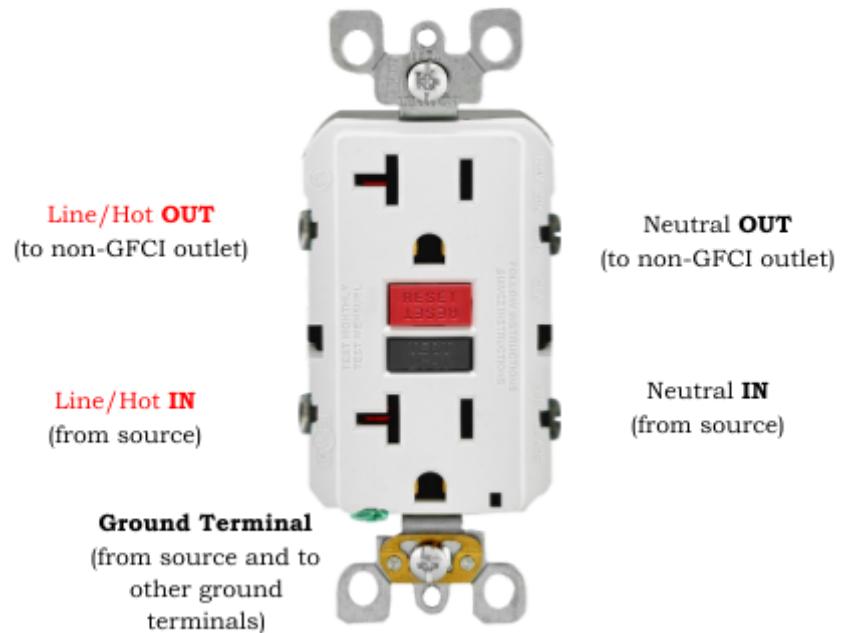


Fig. 5.3: External parts of GFCI Receptacle Outlet

C. GFCI Combo Switch

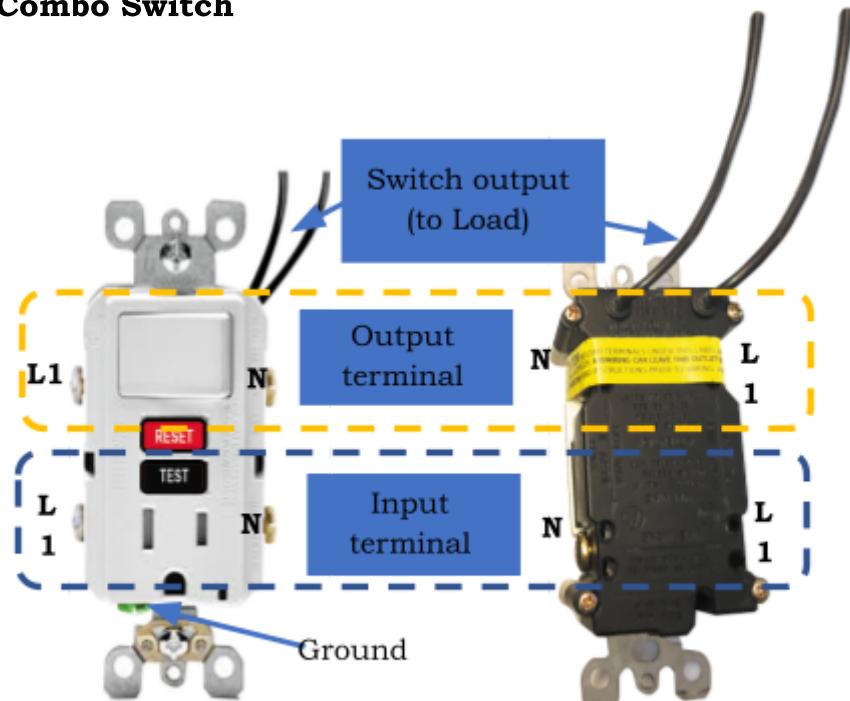


Fig. 5.4: Front and back view of the of GFCI combo switch



What's New

Most of the conventional-typed Filipino electricians only used black wires in their installation. This is acceptable, however, to avoid confusions during splicing, it is important to label every end of the wires for easy identification. This method helps you conserve time in your installation job.

For you to distinguish between wires to terminals, for this lesson, we will be using the following color coding of wires:

-  Black wire for Neutral/Line 2
-  Red wire for Hot/Line 1
-  Green wire for Earth ground
-  White wire connected from the Neutral of GFCI going to loads

From now on, we will be using Line 1 (L1) and Line 2 (L2), which refers to hot wire in red and hot wire in black, respectively. Take note that is intended only for this lesson to avoid confusions, color coding of wires depends on the different Electric service provider of your community. Before installation, refer to the “Standard Installation Guide” of the Electric company in your area. Electric companies in the Philippines may differ from their requirements and standardization of installing wiring connections.

What is the difference between a Neutral and Ground?

Normally, a Neutral wire is a current-carrying conductor, and it is also called a *Ground Conductor*. It is in many ways like a Hot wire that carries the same amount of amperage in a single-phase system. The Ground wire which is usually green in color does not carry a current. It is only designed as a passageway of electricity when a ground fault occurs.



What is It

GFCI Wiring Connections

A. GFCI Breaker

GFCI circuit breakers can be manufactured, built in, added, or as a replacement of existing normal circuit breakers in the panel. Like a normal CB, GFCIs act as the main safety control of the entire or branch circuit in the house. The difference between them is that GFCI breakers offer complete and efficient protection to a person against ground faults. All electrical devices and receptacles connected under a GFCI breaker automatically have full ground fault protection.

Below are the diagrams on how to wire and insert a GFCI breaker in a 220 Volts single phase electrical system. We will include non-GFCI outlets in the circuit for you to know where to connect the output terminals of the breaker.

A.1 Single pole GFCI Breaker Added to an Existing Main Distribution Board

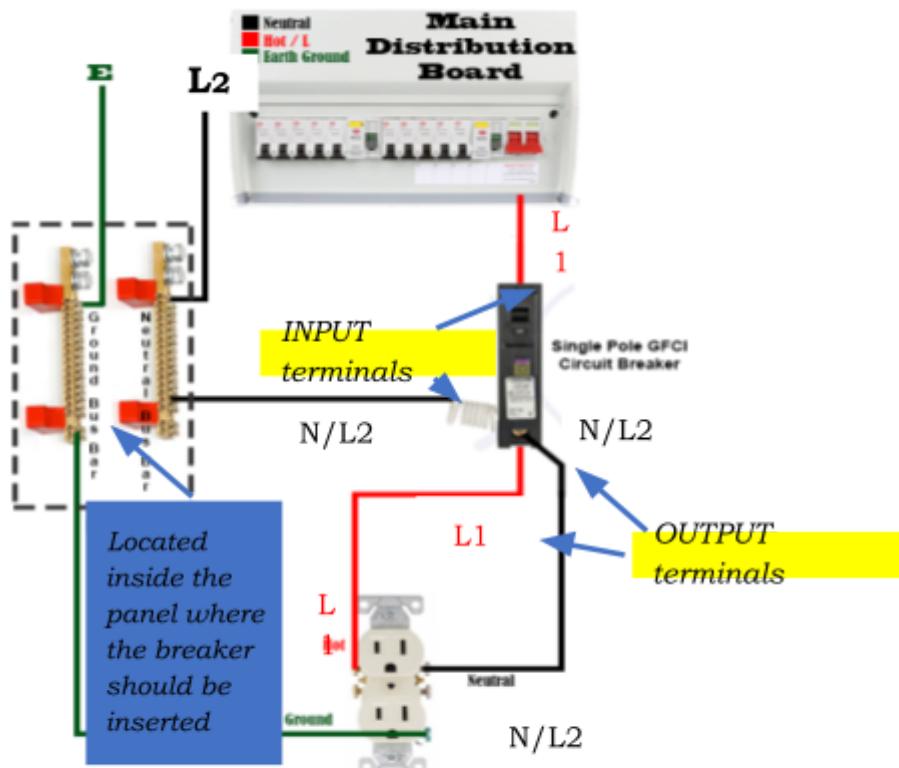


Fig. 5.5: Wiring a GFCI single pole circuit breaker

Figure 5.5 shows that the input L1 of the single pole GFCI breaker is connected from the L1 terminal of the source which is the Main Distribution Board. The coiled white wire which is the input L2 terminal of the GFCI breaker is connected from one of the slots of the Neutral bus bar inside the panel where the GFCI breaker should be inserted. The output L1 terminal located in front of the breaker goes to the input L1 terminal of the receptacle. The output L1 terminal located just directly at the back of the output L2 terminal is connected to the L1 terminal of the receptacle. Ground terminals are connected jointly in the ground bus bar inside the panel of the GFCI breaker.

A.2 Double pole GFCI Breaker Added to an Existing Main Distribution Board

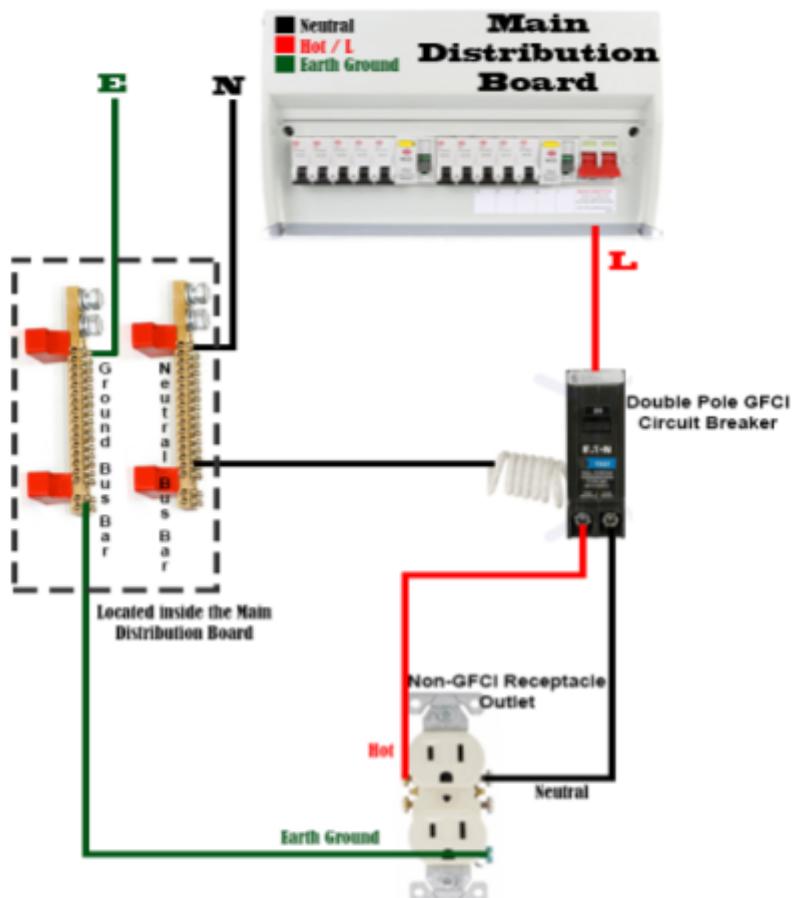


Fig. 5.6: Wiring a GFCI double pole circuit breaker

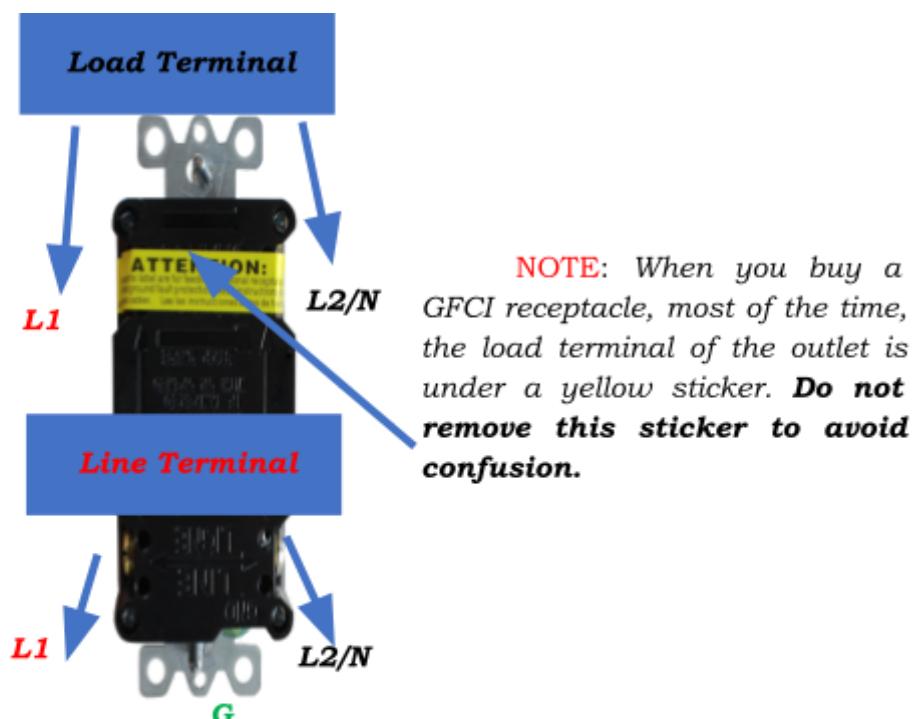
Fig. 5.6 is a wiring connection of a double pole GFCI circuit breaker. If we compare it to the wiring connection of the single pole, it has a slight difference only. Single-pole GFCI have one hot wire and one neutral wire. Double pole GFCI breakers have two hot wires that share one neutral wire. Basically, their wiring connection is just the same it's just that the other hot wire of the double pole GFCI breaker

B. GFCI Receptacles

Ordinary receptacle outlets from your house can be replaced with GFCI. GFCI outlets can protect the person inside your home. Adults or mostly children may encounter electrical accidents when plugging in something to wall outlets. These pre-existing outlets in your area may not be GFCI-protected from a breaker, this means people living in the house cannot be safe from a ground fault.

In order to make ordinary pre-existing outlets ground fault protected, GFCI receptacles must be installed in the circuit. At this point you will be taught how to connect GFCI receptacles into an existing branch circuit.

Before you start' remember to identify and familiarize the terminals of the device prior to installation. There are five terminals in the GFCI outlet. Two input terminals, two outputs and one ground terminal (usually green in color). If you mistakenly connect the LINE wires to the LOAD terminals, the GFCI will still operate like an ordinary receptacle, but it will not interrupt a ground fault. This must be avoided since it defeats the purpose of the installation of GFCI.



<https://tinyurl.com/yboh7sho>

Fig. 5.7: GFCI outlet terminal

Below are the different diagrams for GFCI receptacle wiring connections.

B.1 GFCI Receptacle Outlet Added to Branch circuit

The diagram in Figure 5.8 shows the connection of a GFCI receptacle directly from the source. The power source is coming from a non-GFCI breaker of a branch circuit. The L terminal of the receptacle is connected from the Line terminal coming from the source and the ground terminal is connected from the ground bus bar. Lastly, the line 2 terminal which is the neutral is connected from the neutral bus bar inside the branch panel.

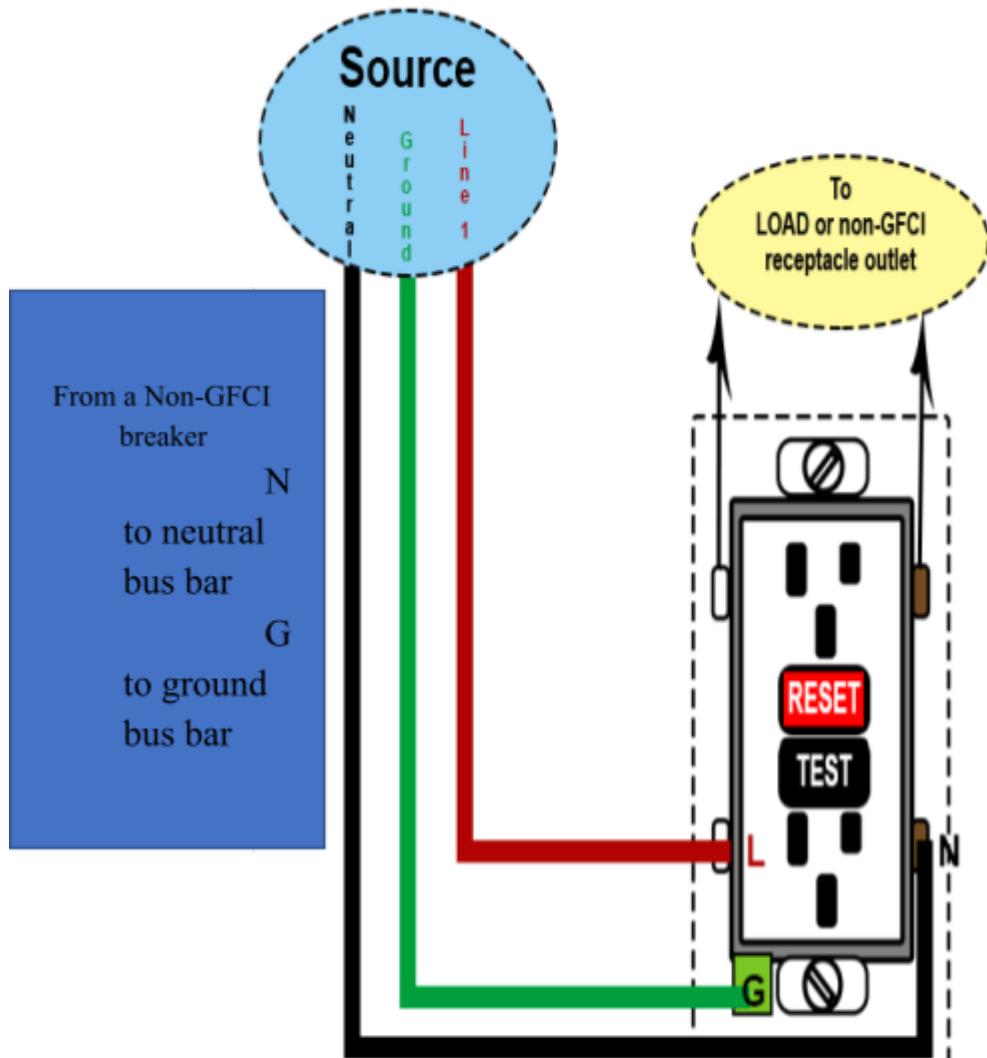


Fig. 5.8: Single receptacle outlet wiring diagram

B.2 Multiple GFCI Receptacle wiring connections

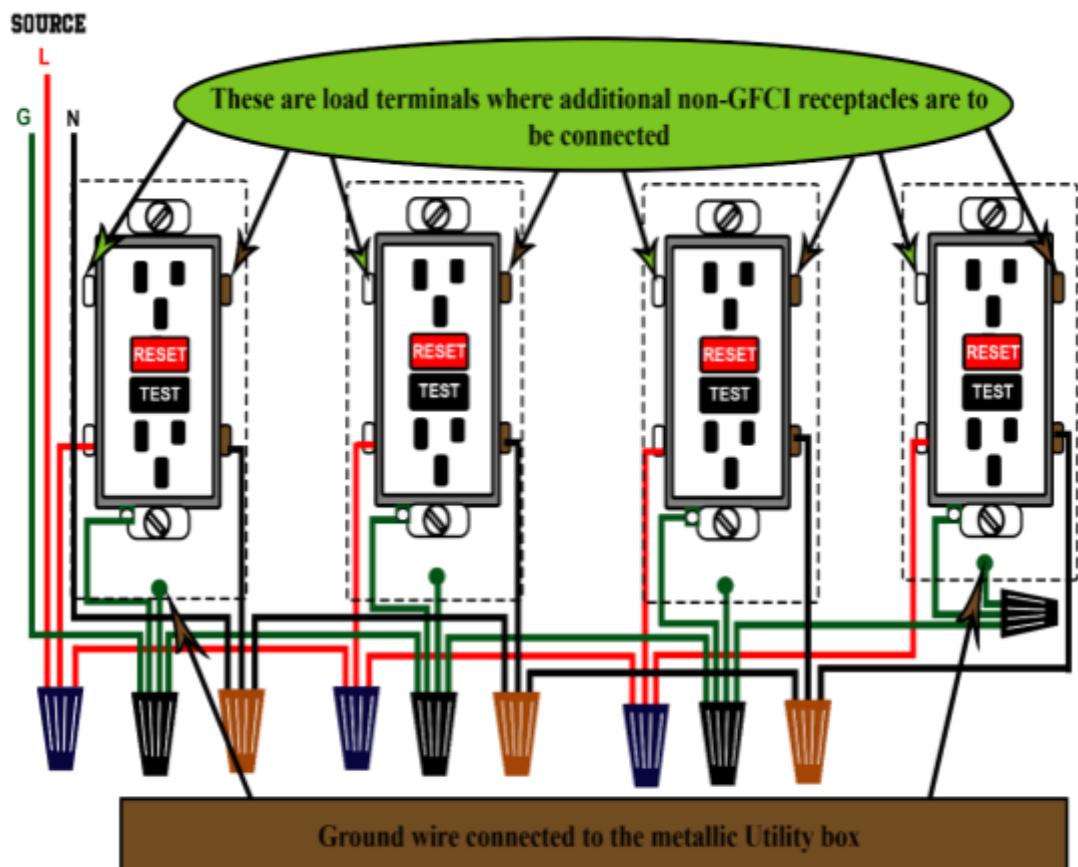


Fig. 5.9: Wiring diagram for multiple GFCI receptacles in a branch circuit

The diagram shows four GFCI receptacles connected in one circuit. This wiring connection is mostly applicable in some areas where there is a need to install more than one GFCI outlet like in the kitchen or in the larger laundry area.

As you can see, all L1 terminals (Red wire) of each receptacle are connected to each other by means of a wire nut (Blue). The same with all remaining terminals, L2 (black wire) are all connected to each other (Brown wire nut) and lastly ground terminals (Green wire) are connected the same (Black wire nut). The green dot in the outlets represents a connection of the ground wire to the metallic box that encloses the outlets. There is no need for that connection if the boxes used are non-metallic.

C. Non-GFCI outlets Connected to GFCI Receptacles

Ordinary outlets connected to the load terminals of the GFCI receptacles are ground fault protected.

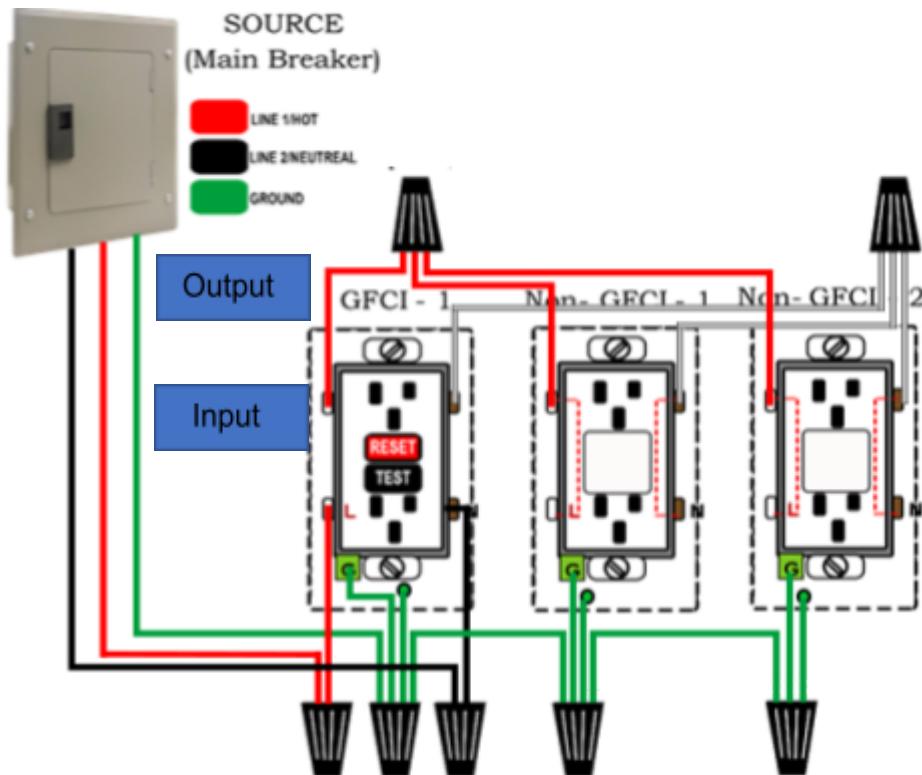


Fig. 2.10: Wiring diagram of multiple ordinary outlets connected to GFCI receptacle

The diagram shows that the input terminals of the GFCI are connected to the main breaker respectively. While the other two-output terminals are connected to the two ordinary outlets. At this point the ordinary outlets are ground fault protected. Also, notice that all ground terminals are connected altogether including a connection in the body of the metallic box used to enclose the receptacles. Grounding is no longer necessary to plastic boxes.

D. GFCI combo switch wiring diagram

Installing GFCI combo switches can be more complicated than installing GFCI receptacles and it takes a lot of practice. This device has many functions. For you to be familiar with the functions, familiarize the terminals of the device and study the diagram below.

D.1 Wiring Diagram of GFCI Combo Switch Outlet Connected to a Bulb (Light bulb is GFCI Protected)

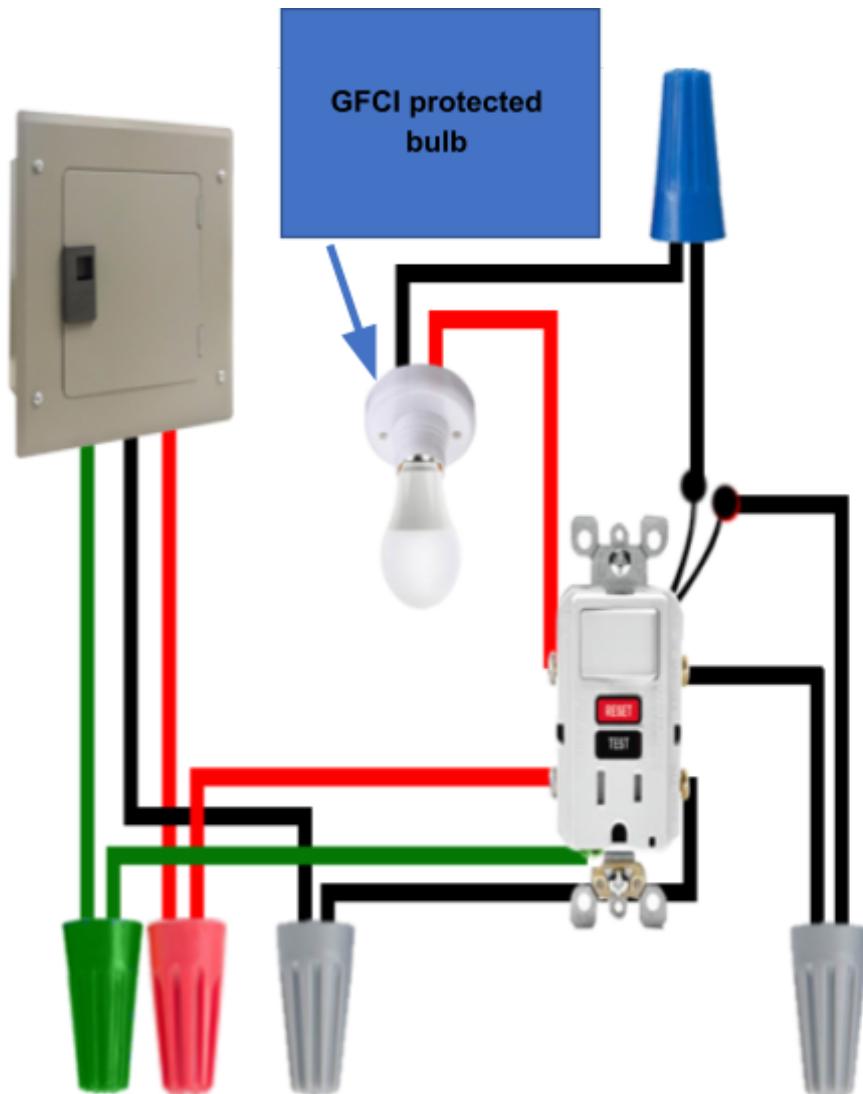


Fig. 5.11: Wiring diagram of GFCI combo switch outlet to a ground fault protected bulb

In this diagram, the input terminals L1 and Neutral of the GFCI combo switch are connected to the main breaker which is the same in the GFCI receptacle outlet diagram. The output L-terminal is connected directly to the light bulb and the output Neutral terminal is connected to the switch output of the device. The connection between the other switch output wire and the bulb makes the light bulb GFCI protected.

D.2 Wiring Diagram of GFCI Combo Switch Outlet Connected to a Bulb (Light bulb is not GFCI protected)

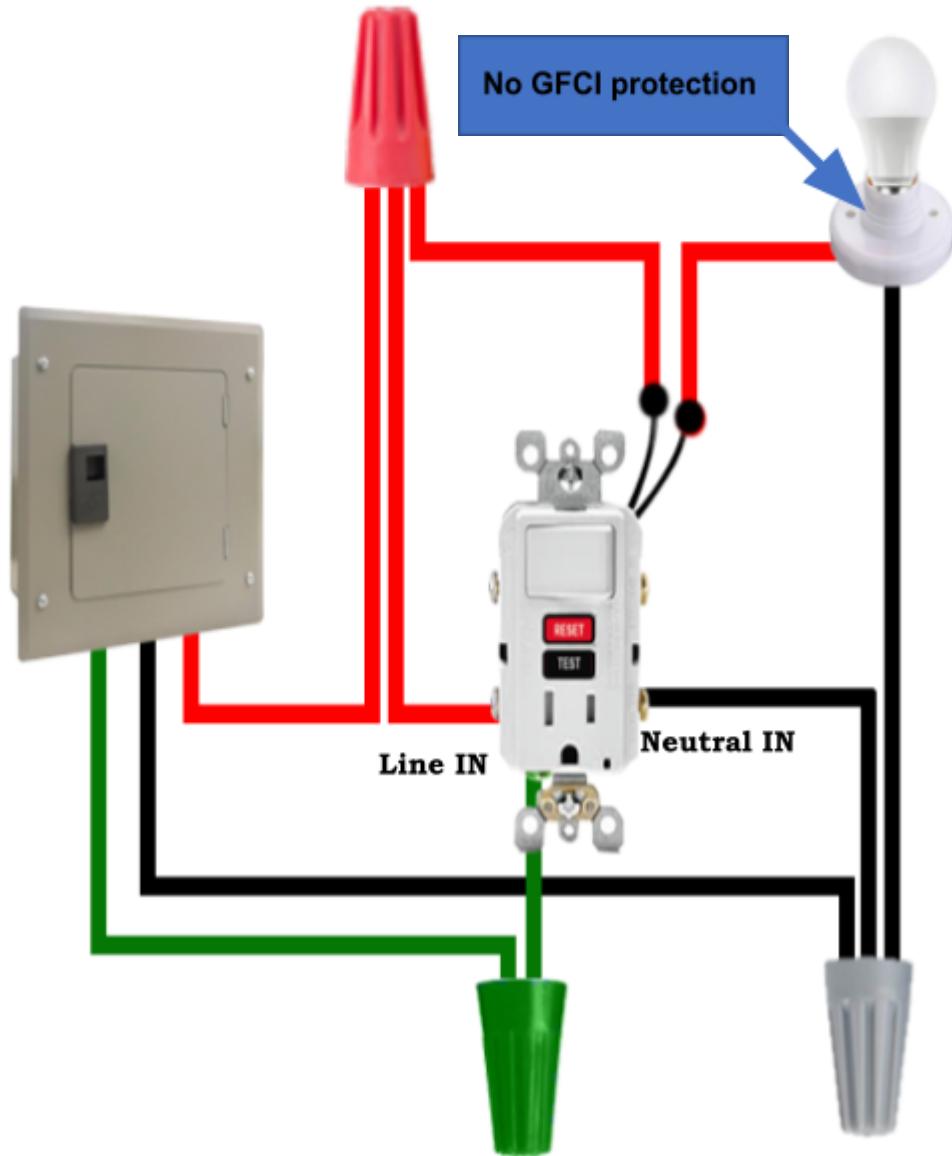


Fig. 5.12: Wiring diagram of GFCI combo switch outlet to a nonground fault-protected bulb

The diagram shows that the light bulb is directly connected to the input Line terminal of the GFCI combo switch. The device will just act as an ordinary control switch of the bulb, but the latter will not be GFCI protected. As you can see, there are no connections in the output terminals of the GFCI combo switch. This connection is applicable to lighting which does not need ground fault protection.

D.3 Wiring Diagram of GFCI Combo Switch Outlet Connected to an Ordinary Outlet (Switched-controlled and GFCI protected ordinary outlet)

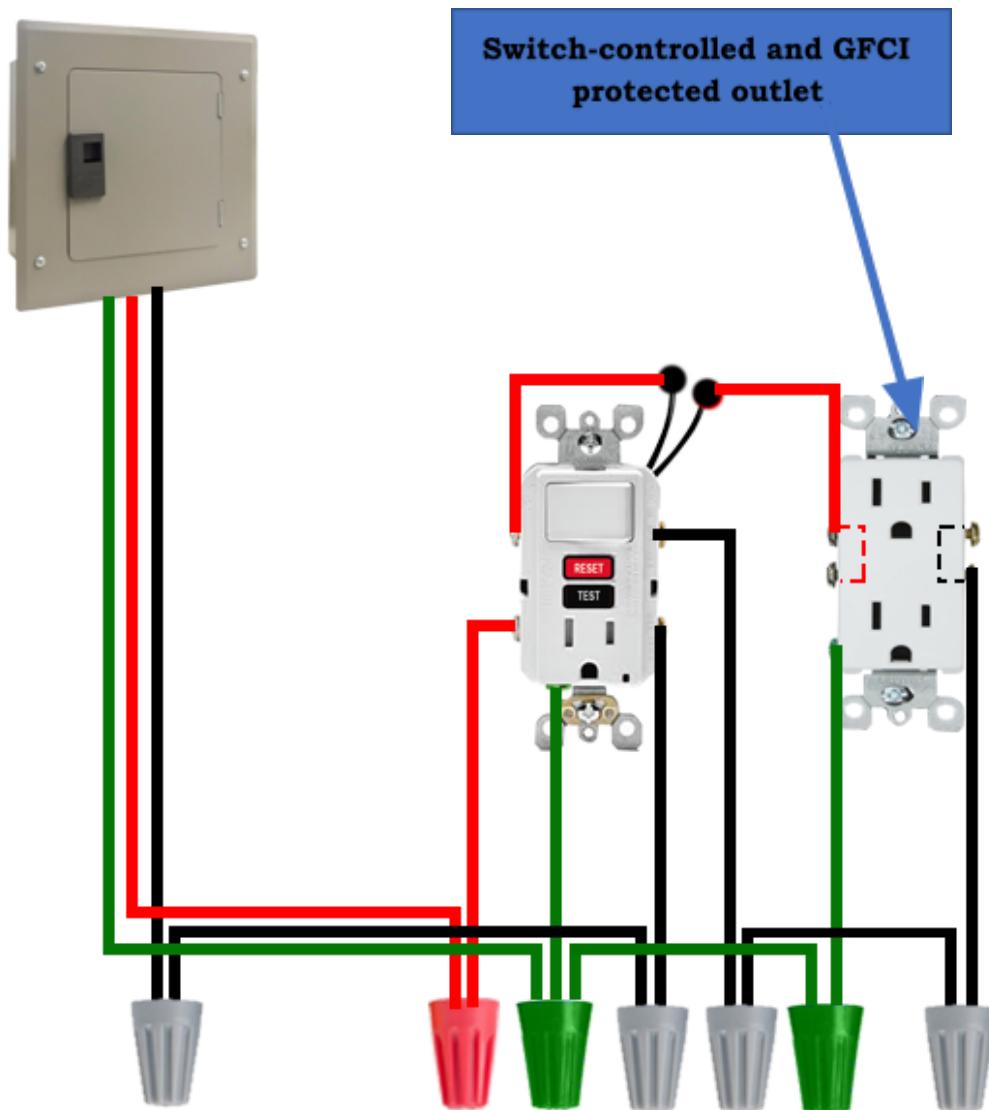


Fig. 5.13: Wiring diagram of ordinary outlet controlled and protected by GFCI combo switch

The diagram shows that the ordinary outlet is controlled by a switch and is also GFCI protected since it is connected to the output terminals of the GFCI. Any load inserted to the non-GFCI outlet is ground fault protected and is basically controlled by the built-in switch.

D.4 Wiring Diagram of Combo Switch with GFCI-protected light bulb and receptacle Outlet

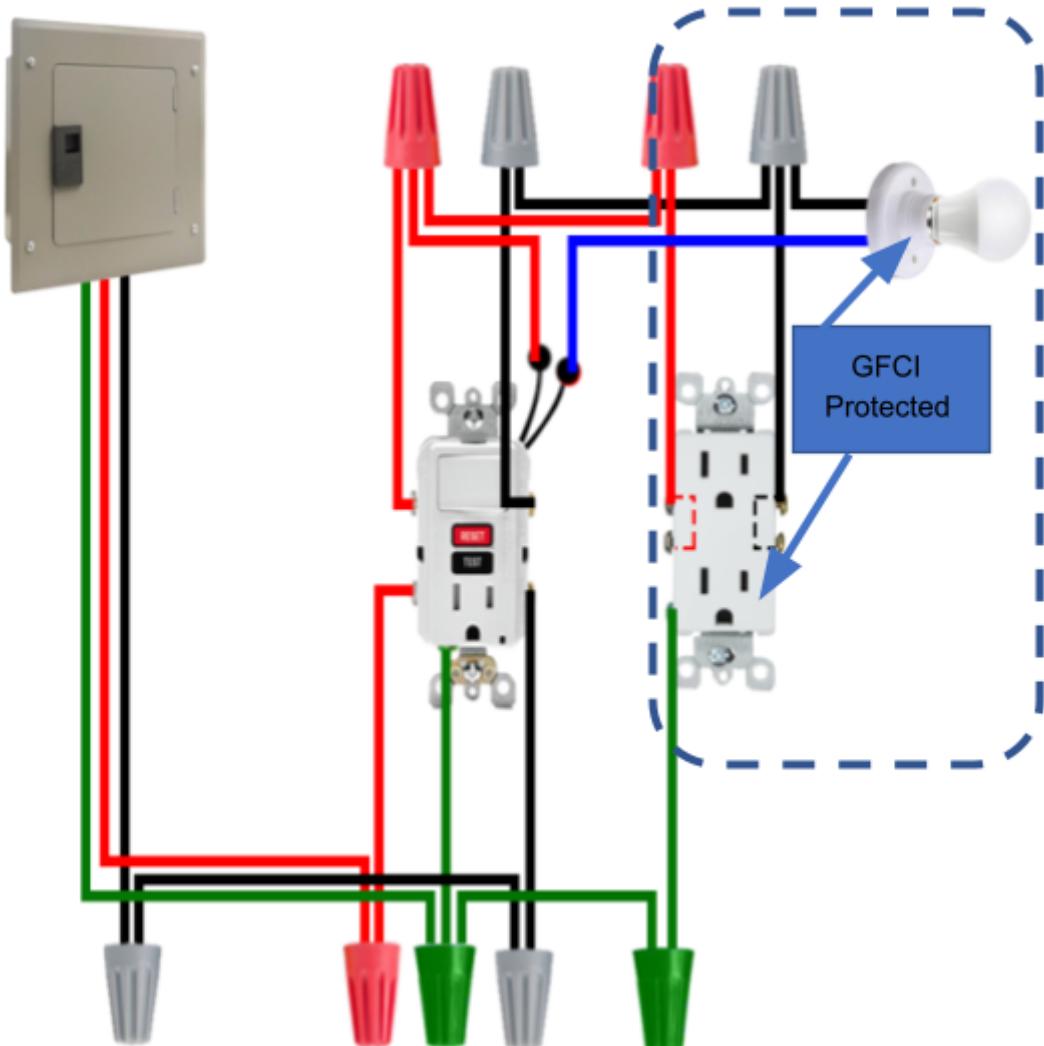


Fig. 5.14: Wiring diagram of a light bulb and ordinary outlet ground fault protected by GFCI combo switch

The above diagram shows that the light bulb can be controlled through the ON/OFF operation of the GFCI switch. Both the ordinary outlet and the light bulb are connected from the output terminal of the GFCI, hence making them GFCI protected. The outlet however is connected directly to the output terminal of the GFCI, hence making it independent from the operation of the switch.

D.5 Wiring diagram of built-in Switch controls the GFCI receptacle itself

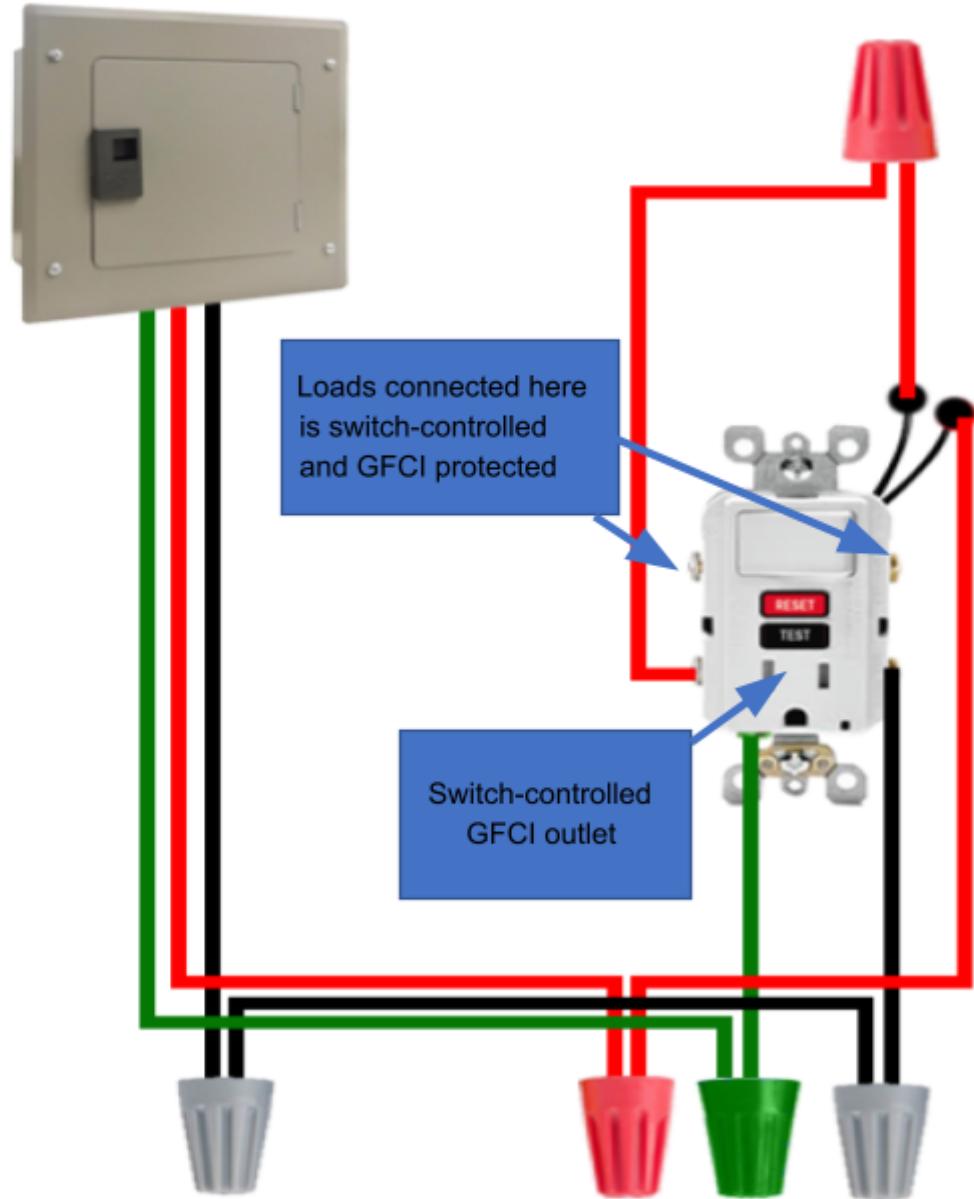


Fig. 5.15: Wiring diagram of GFCI combo outlet controlling itself

In this case, the built-in switch in the GFCI combo controls both the output terminals and one of the input terminals of the device itself, thus the switch regulates other outlets that will be connected to the output terminals and also all loads that will be inserted to its outlet.

When installing or connecting the GFCI devices in the circuit and preparing your PWB, have the following ready:

A. TOOLS



Philip and Flat
Screwdriver



Wire Stripper



Side cutting pliers



Lineman's pliers



Longnose pliers

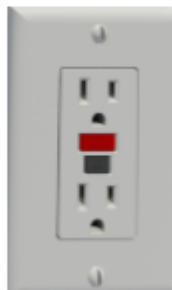


V
O
M

B. Electrical Materials/Devices



GFCI combo
switch with plate



GFCI
Receptacle



3-prong
Male plug



Gang box



Wire nuts



Bulb



Single
stranded wires
#14



Bulb socket



Electrical tape



Plug-in type single pole
GFCI breaker



Plug-in type
panel board



Miniature
breaker



Plug-in type
double pole GFCI
breaker

C. PPE



Safety goggles

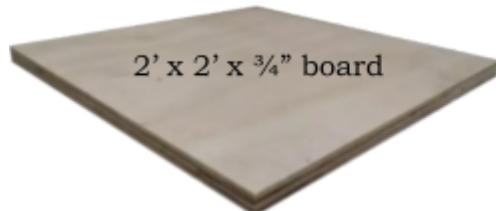


Hard hat



Rubberized gloves

D. Other materials



2' x 2' x 3/4" board



8 x 3/4" Wood screw

Lesson

2

Perform Actual Wiring Connections Using GFCI Devices



What is It

For your exercise wiring job in this lesson, you must prepare a Practice Wiring Board (PWB) 1 and 2. Please do not worry if you do not have your own board because your trainer will provide it for you. But if you can, the PWB model below will be your guide in constructing the board. You may use a different format provided that all materials are present.

In PWB-1 (Figure 6.1), the source is through a 3-prong male plug (with ground) connected to the miniature circuit breaker. There are two GFCI outlets and two non-GFCI outlets. It has 3 wires, green, black, and red which are connected from the input terminal of the device. While the other two wires, red and white are from the output terminal (L1 and N/L2).

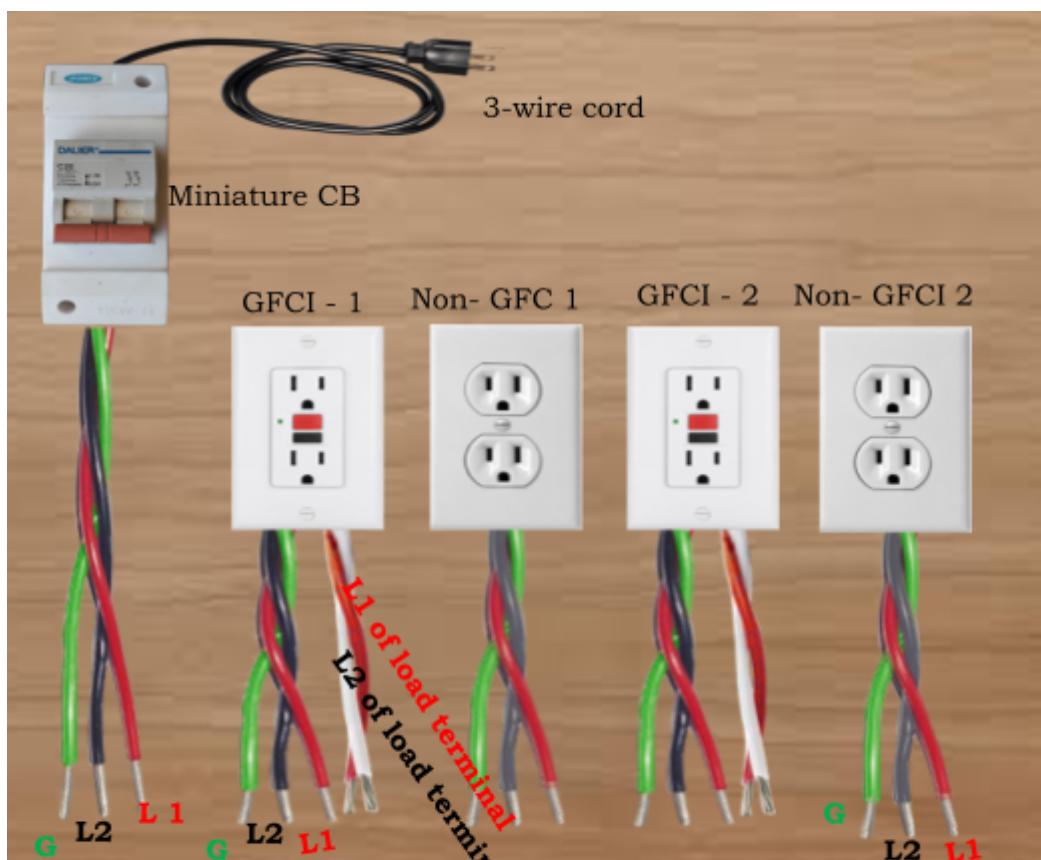


Fig. 6.1: Practice Wiring Board 1

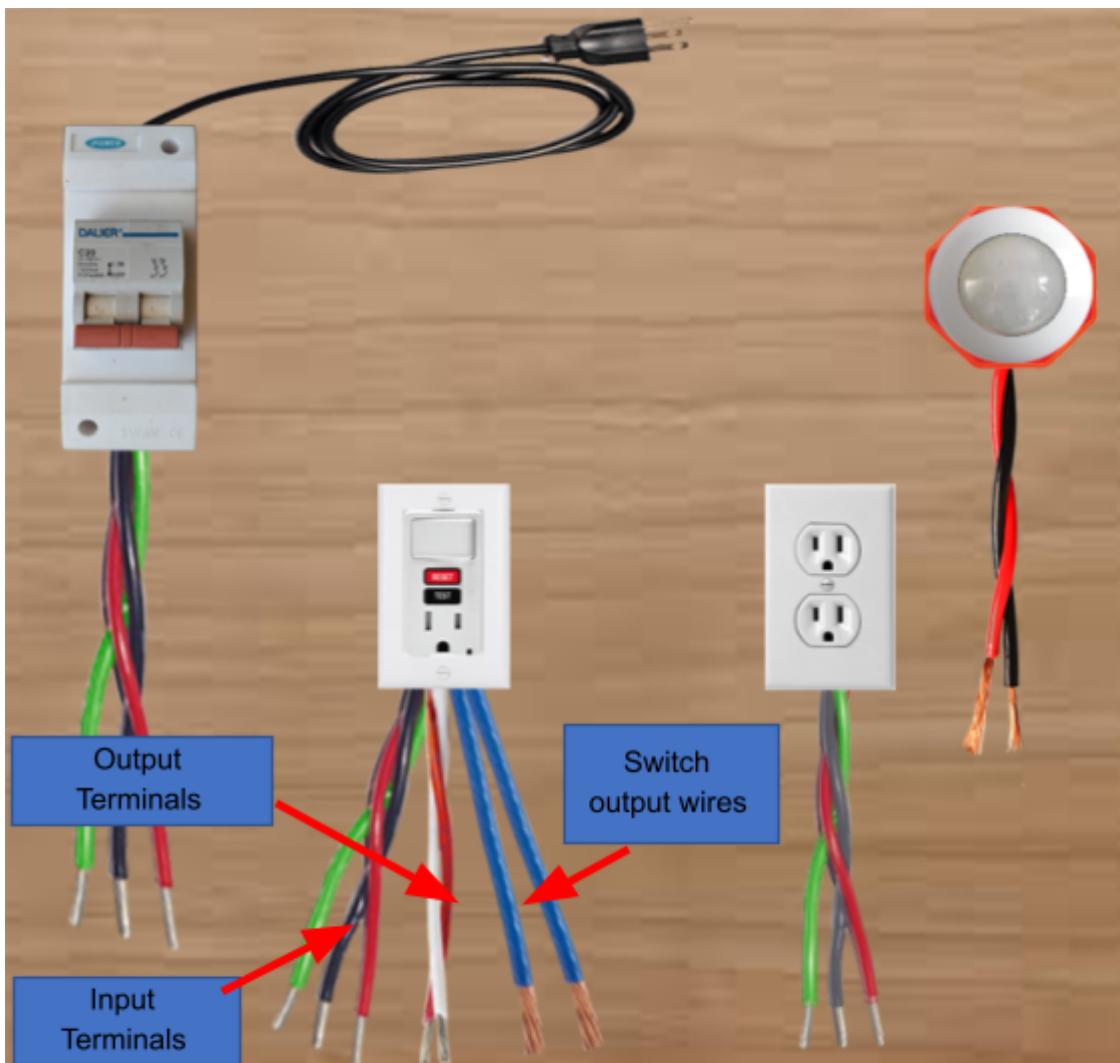


Fig. 6.2: Practice Wiring Board 2

PWB-2 is a practice wiring board for GFCI combo switches. In it are the miniature CB, 3-prong male plug, GFCI combo switch, light bulb and an ordinary outlet. The plug and the CB are connected the same way in PWB-1.

There are seven drop wires in the GFCI combo switch. The first 3 starting from the green are the input terminals; ground, neutral, and Line 1 respectively. The other two wires black and red are the output terminals L1 and N/L2. The blue wires are the switch output wires of the combo switch. On the other hand, the wires coming from the ordinary outlet are the ground (green), L1(red), and N/L2 (black).

Both PWB do not use metallic boxes/enclosures, therefore, there is no need to connect the green wires of the board directly to the ground. Green wire coming from the CB is directly connected to the ground of the plug which is to be inserted to the 3-holes wall outlet. If you construct your own board with metals in it, be

sure to connect them to the green wire of your board for your safety. If the PWB is not available during this training, have a photocopy of the activity and use different colors of writing materials, draw and practice wiring them as if you are connecting real electrical devices in a real board. Anyway, your trainer will arrange a one-on-one meeting with you for your wiring connection in actuality.

Importance: Using the PWB for wiring connections is for practice only. This is purely intended for your diagramming exercises in an actual scenario. Do not consider this activity as your electrical installation already. We will come into that in the last part of the module.

To the trainer/teacher

Parents/Learners are not required to make their own PWB, but whenever they will decide to, DO NOT LET THEM USE without checking it first and until orientation and safety precaution are given to them.



What's More

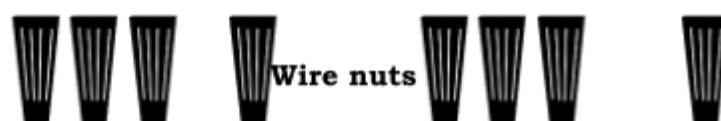
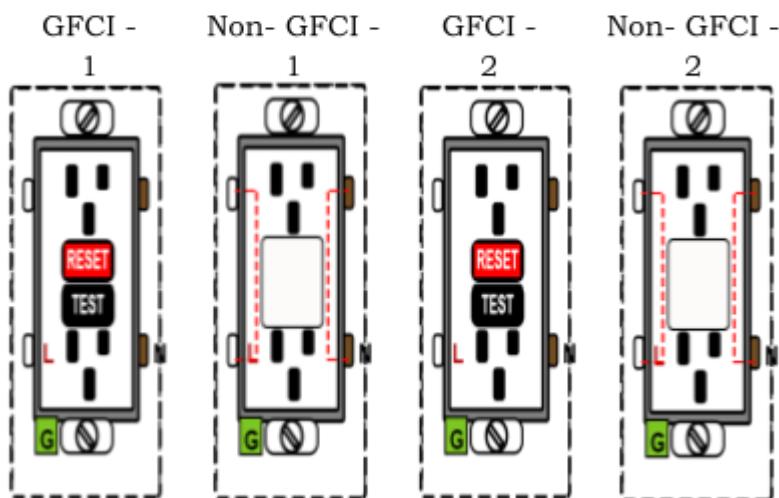
Practice your diagramming skill by answering the given sample below. You may print/photocopy this page or draw in a separate sheet of paper.

Test I. Instructions: Using a ruler, pencil (representing gray/white wire), Red pen (For Line 1/Hot), Black pen (Line 2/Neutral), and Green pen (for ground), make a wiring diagram of multiple GFCI and Non-GFCI receptacles by connecting the terminals correctly. You may use any available writing materials as long as you will label the wire for recognition purposes. Use straight horizontal and vertical lines only (No Slanting lines). You may photocopy this page as your answer sheet. Connect the devices shown in Figure 6.3 to create a diagram of a multiple GFCI and outlets in a circuit. Then using the PWB in letter B, Figure 6.2, make an actual connection of the diagram that corresponds in diagram A. If you don't have your own PWB, just use your multi-colored sign pen to connect the wires coming from each box as if you are performing the actual wiring connection.



SOURCE
(Main
Breaker)

■ LINE 1 HOT
■ LINE 2 NEUTRAL
■ GROUND



Wire nuts (all wires connected to each other should be inserted a wire nut. Maximum of 3 wires in each wire nut)

Fig. 6.3: Wiring diagram for multiple GFCI and outlets in a circuit

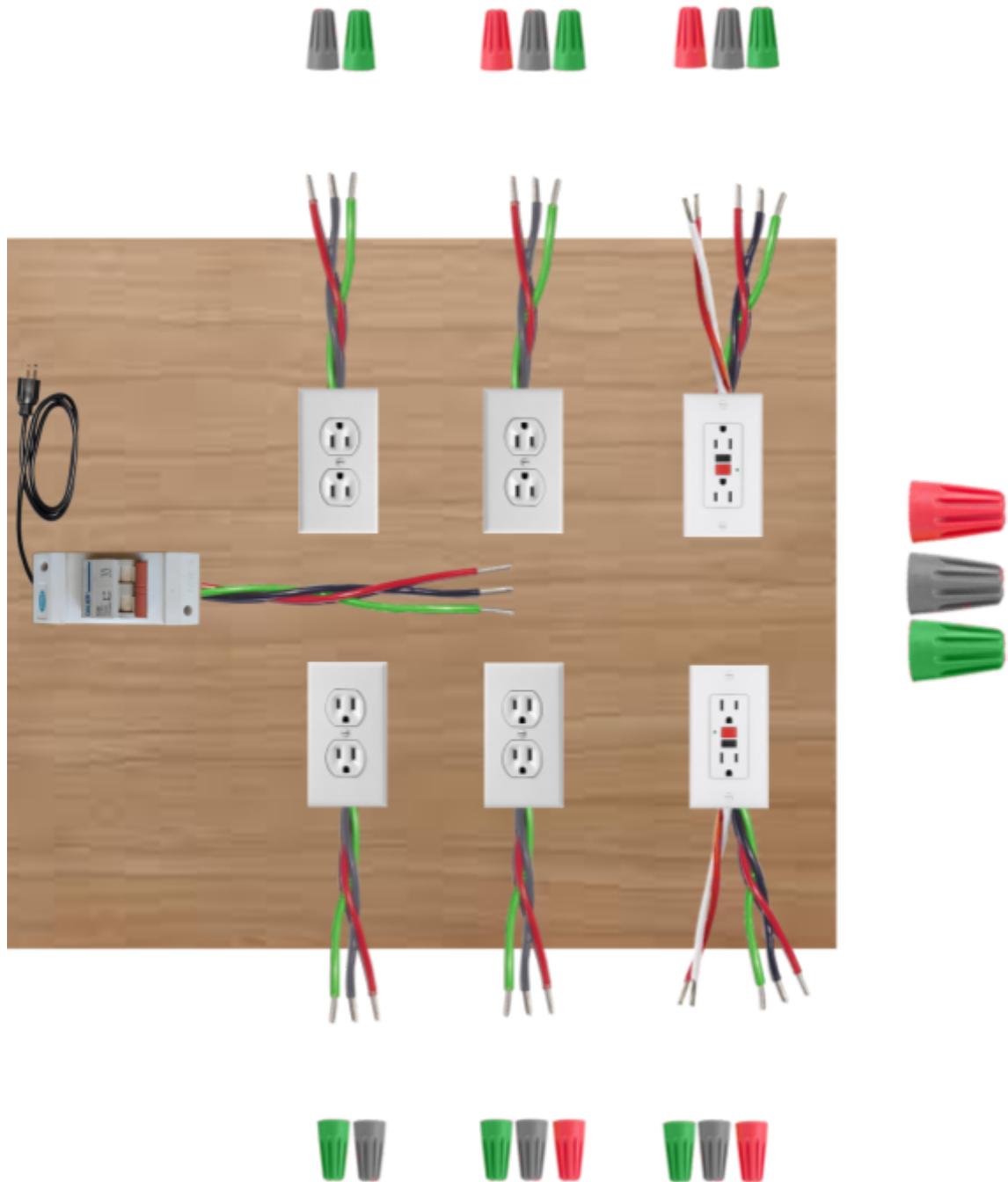
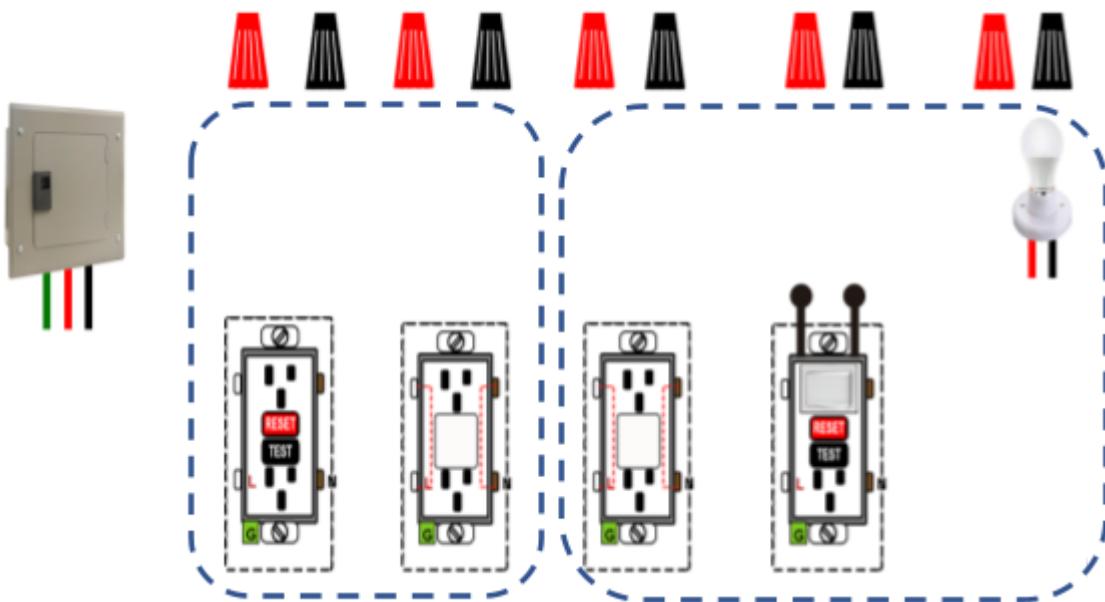


Fig. 6.4: PWB for of GFCI practice wiring connection

NOTE: If you have brand-new devices to install, please be certain to follow all instructions and diagrams in the manufacturer's manual and specification provided with the product. Wiring connections may be the same but will differ from labeling and coding of terminals depending on the brands of the item.

Test II. Diagramming: Given the electrical devices below, construct a wiring diagram following the conditions:

- Both bulb 1 and outlet 1 is GFCI protected from GFCI combo 1 but only the light bulb is switch controlled (10 points)
- Outlet 2 is GFCI protected from GFCI 2 (5 points)
- Using of ruler and proper coding of wires must be observed (5 points)





What I Have Learned

Please do not forget to write the following on your answer sheet:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

Name of Activity: What I Have Learned Date: _____

Directions: True or False: Write TRUE if the statement is correct otherwise write FALSE.

1. Except from the ground, using all black wires in the Philippine electrical wiring system is not acceptable even if you labeled all end-to-end of the wires correspondingly.
2. OHS allows individuals to do electrical related jobs without wearing proper PPE.
3. In a branch circuit, a GFCI outlet must be connected right after the breaker to make all non-GFCI outlets ground fault protected.
4. Input and output terminals of the GFCI receptacle outlet can be interchangeably connected.
5. Multiple GFCI receptacle wiring installation is not allowed in the living room.



What I Can Do

Please do not forget to include the following detail upon the submission of your output:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

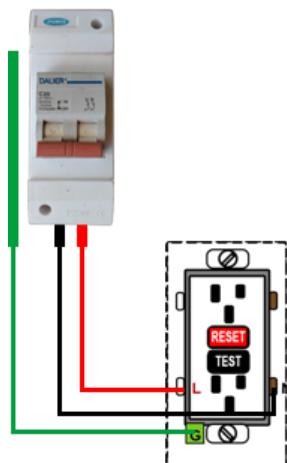
Name of Activity: What I Can Do Date: _____

A. Directions: Following the color coding, use different colors of writing pen and a ruler to connect the devices appropriately in the wiring diagram.

Remember, try answering the practice exercises without rescanning the lesson. Reproduce two (2) copies for the exercises so that if you cannot get it correctly at first, you will have the second time to rescan the lesson and do the exercise again.

Below is an example for your guide.

Example: Wiring connection of a Single GFCI receptacle outlet in a circuit.



Materials:

Pencil, Multi-color Sign pen, Two copies of this activity sheet, and ruler

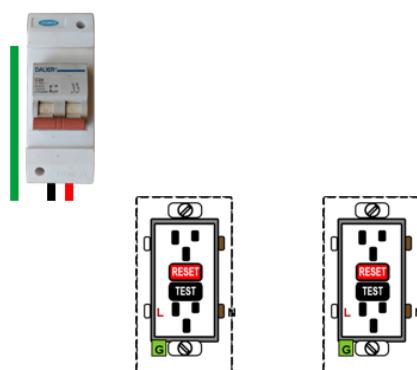
Note:

Use vertical and horizontal line only in drawing

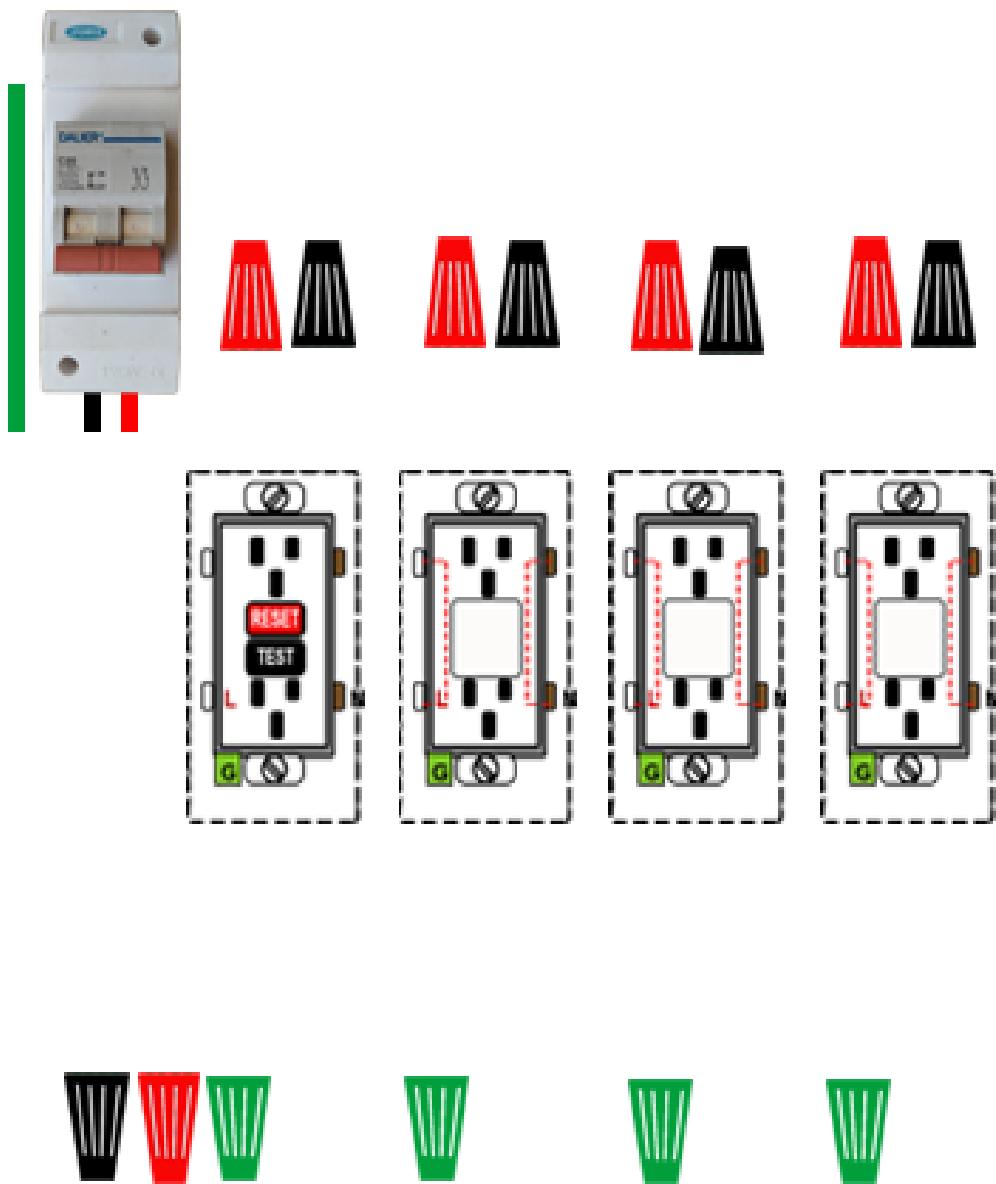
Maximum of 3 wires only in each wire nut.

You may add additional wire nuts if necessary

1. Wiring diagram of two GFCI receptacle outlets in one circuit. (25 points)



2. Wiring diagram of multiple ordinary outlets connected to one GFCI receptacle outlet in one circuit. (25 points)

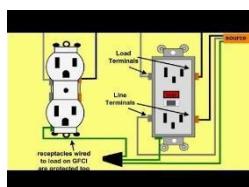


Your performance will be evaluated using the criteria below:

PERFORMANCE LEVEL					
Criteria	Performance Level				
	Excellent 5	Very Satisfactory 4	Satisfactory 3	Needs Improvement 2	Points Earned
1. Used of proper drawing materials					
2. Application of color coding and correct used of symbols and lines					
3. Accuracy and correctness of wiring diagram					
4. Timeliness and Quality of drawing outputs					

You may watch the following YouTube videos for additional information.

Video 1: How To Wire A GFCI And Receptacle by Mountaineer Outdoors



<https://tinyurl.com/ybuquhvf>

Video 2: Upgrading an Outlet to GFCI by GReviewz



<https://tinyurl.com/yc72djt>

B. Directions: Connect the wires of the board according to the wiring diagram then explain in detail the connections.

Reminder: Call your parents or your buddy to watch over you. Your parents must have been oriented by your trainer on what to do during this exercise.

Materials needed are Pencil, Multi-color sign pen, two copies of this activity sheet

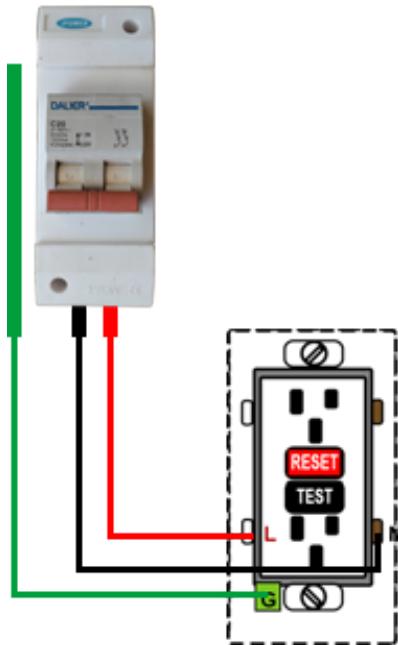
ANSWER ONLY TWO OUT OF THE THREE ACTIVITIES GIVEN.

Note:

- Straight line is not necessary. Make the connection looks like a real wire as much as possible
- Maximum of 3 wires only in each wire nut. You may not use all or add additional wire nuts if necessary.

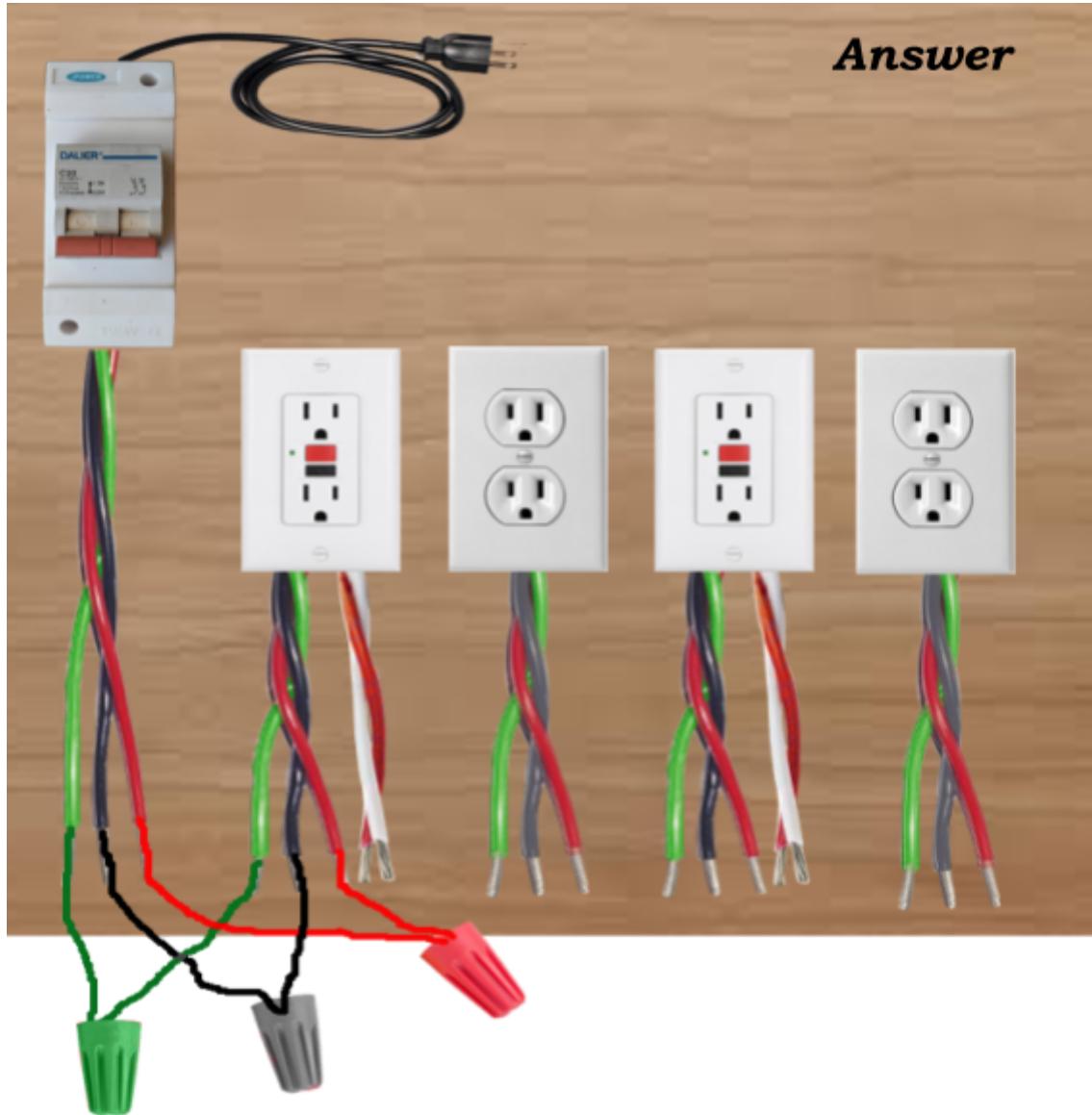
Below is an example that serves as your guide.

Example: Wiring connection of a Single GFCI receptacle outlet in a circuit.



NOTE: In the succeeding activity, draw the schematic diagram on a separate sheet of long white bond paper. Make a 1-inch margin in all sides.

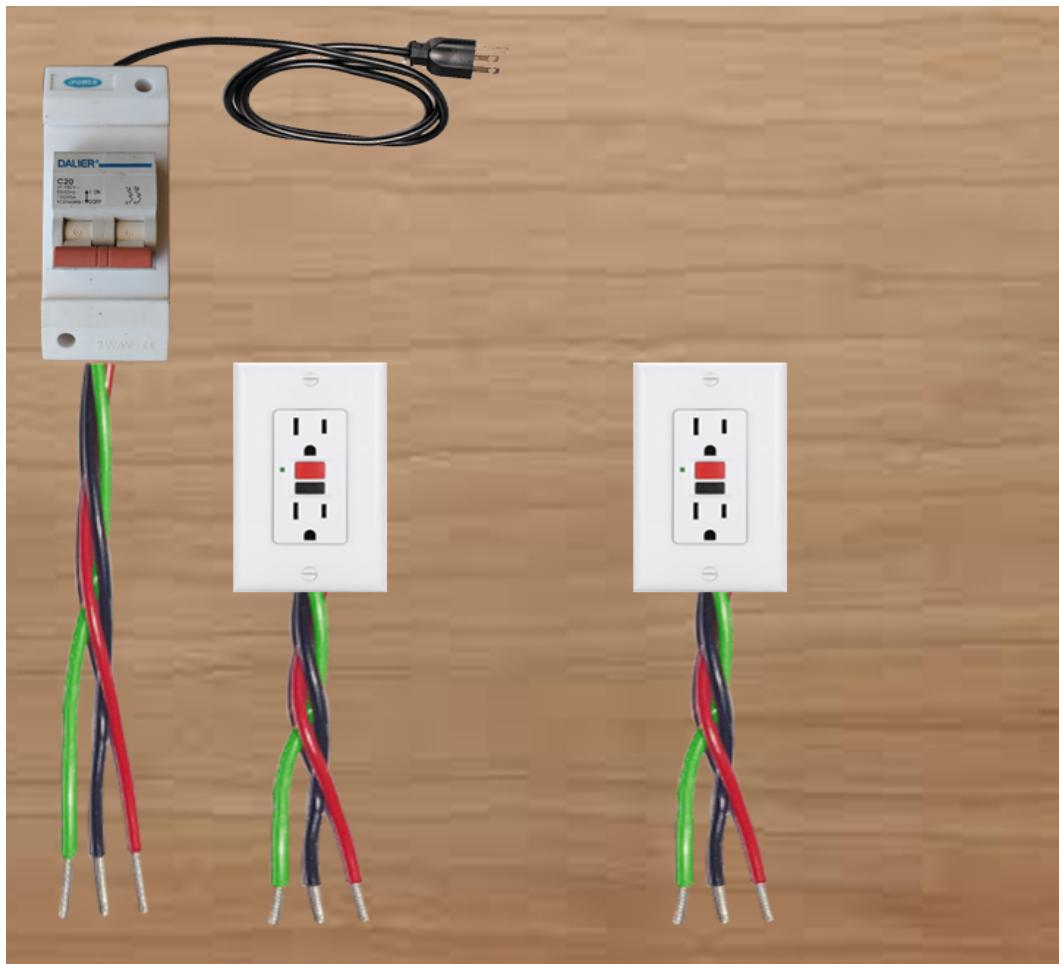
Answer



Explanation:

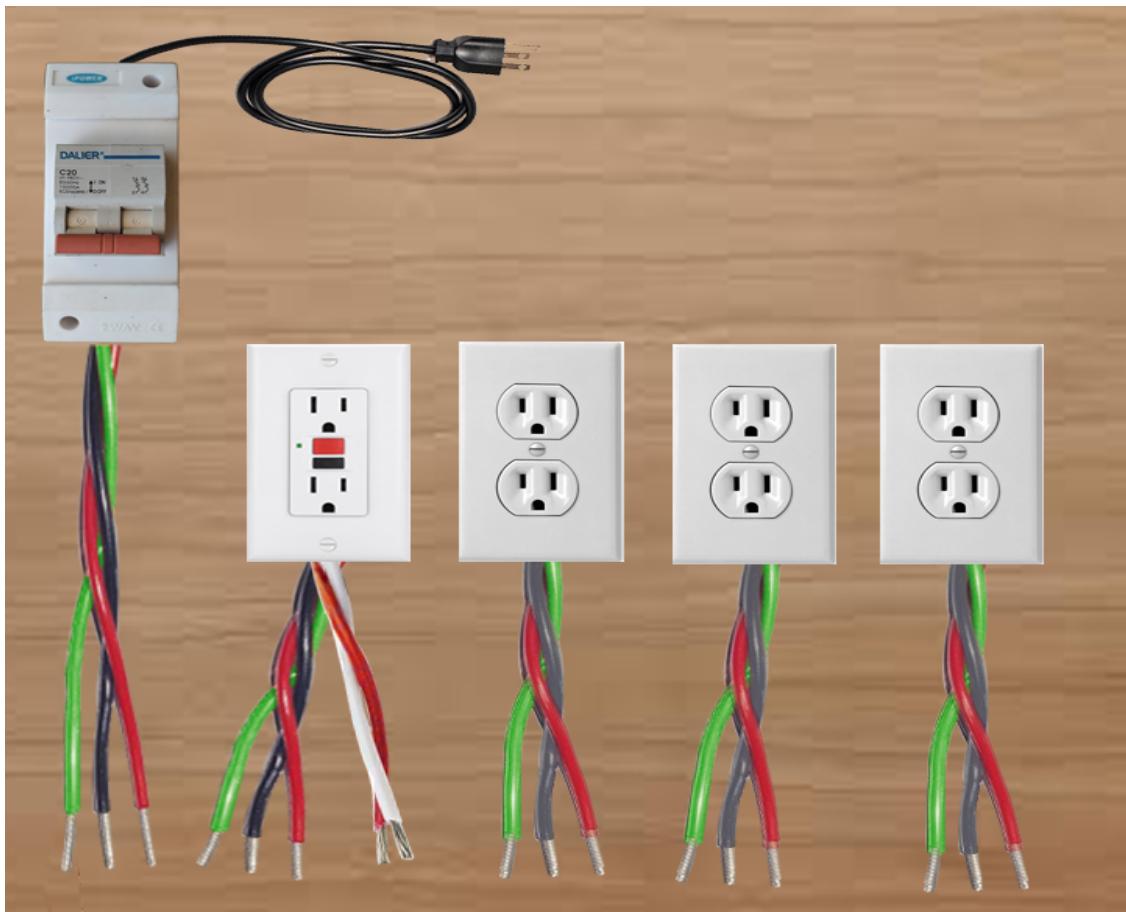
In the diagram, the L1, N/L2, and ground from the input terminals of the GFCI receptacle outlet are connected to the L1, N/L2, and ground terminals respectively of the breaker.

1. Wiring diagram of two GFCI receptacle outlets in one circuit. (25 points)



Explanation

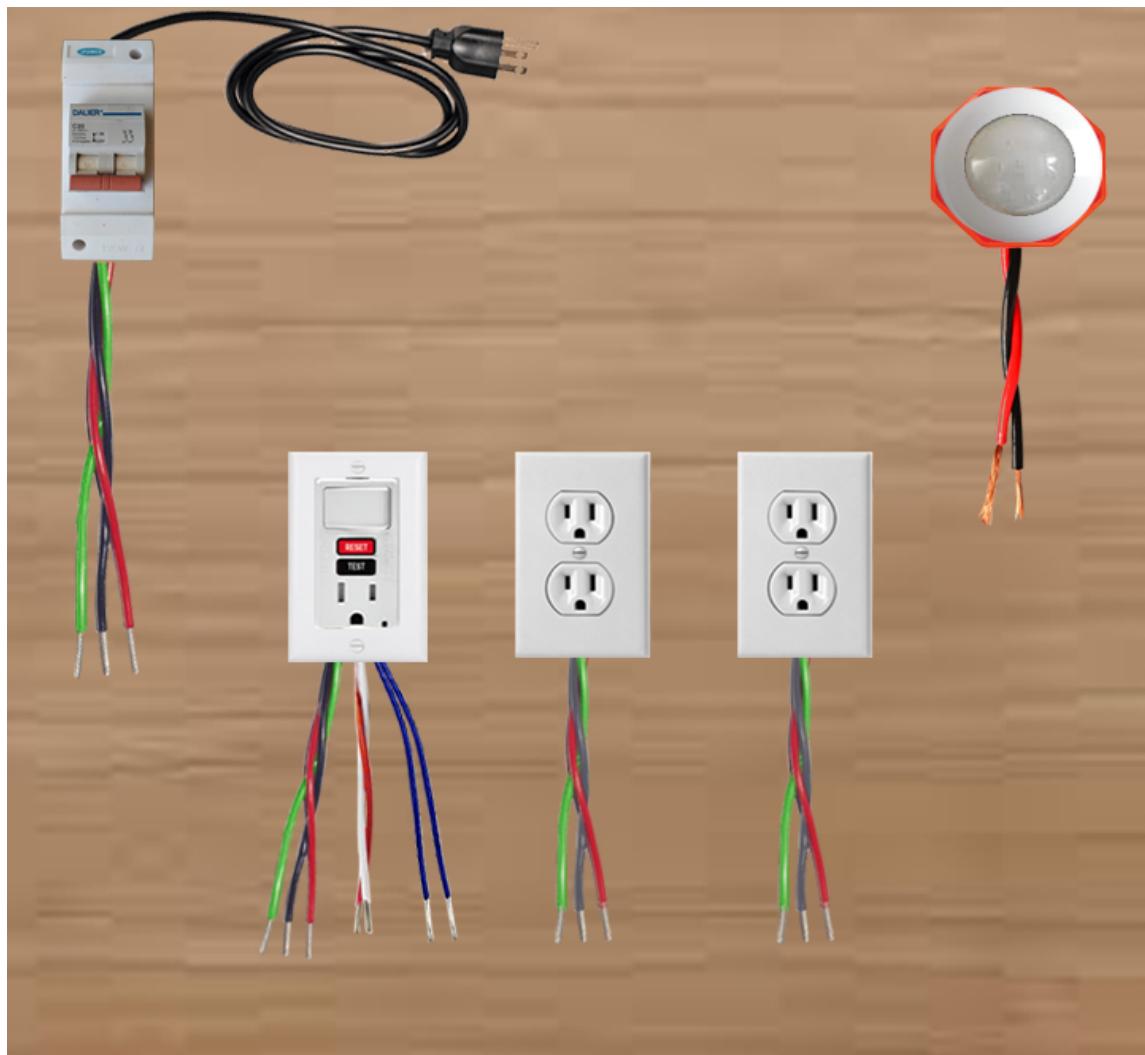
2. Wiring diagram of multiple ordinary outlets connected to one GFCI receptacle outlet in one circuit. (25 points)



Explanation

3. Wiring diagram of GFCI combo switch with two GFCI-protected ordinary outlets and a light bulb controlled by a switch. (25 POINTS)

All outlets and the light bulb are GFCI protected but only the bulb is switch-controlled.



Explanation

To verify the actual wiring connections in your PWB, plug it into the wall outlet and insert any current indicator to each GFCI receptacle and outlets then do the procedure in Testing and Resetting GFCI receptacle as discussed in the previous lesson. If the devices function correctly, then your electrical job is perfect.

Congratulations!

PERFORMANCE LEVEL					
Criteria	Performance Level				
	Excellent 5	Very Satisfactory 4	Satisfactory 3	Needs Improvement 2	Points Earned
	Used of tools and equipment				
	Application of procedures				
	Safety work habit				
Timeliness and Quality of the task done					
Quality/Correctness/Functionality					

Your performance will be evaluated using the criteria below:



Assessment

Please do not forget to write the following on your answer sheet:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

Name of Activity: Assessment Date: _____

Directions: Read each of the following statements carefully and choose the letter of the correct answer.

1. What is the device used against shock and electrocution? It de-energizes a circuit when it senses a difference in the amount of electricity passing through the device and returning through the device, or a leak of current from the circuit.
A. Circuit breaker B. Relay C. GFCI D. Switch
2. GFCI device that has a built-in switch.
A. GCFI breaker B. GFCI receptacle outlet C. GFCI cord D. GFCI combo
3. A conductor-connecting device that is located inside a panel where ground or neutral wires are to be inserted and screwed.
A. Bus bar B. Screw bar C. Jumper wires D. Slug
4. The built-in white wire of the GFCI breaker is the _____.
A. Line C. Ground
B. Neutral D. Load
5. The input or line side of the GFCI breaker is connected from/to _____.
A. Lighting receptacle C. House circuit
B. Receptacle outlet D. Source
6. If the Line terminal from the source is connected first to the built-in switch output wire of the GFCI combo, the GFCI outlet of the device and the loads connected to the output terminals are _____.
A. GFCI unprotected C. ON/OFF controlled
B. Unfunctional D. Ordinary outlet
7. In a circuit where there is a GFCI and ordinary outlet, the latter becomes ground fault protected when _____.
A. It is connected from the output terminal of the GFCI
B. The ordinary outlet is directly connected from the source
C. It is connected directly from the input terminal of the GFCI
D. When both GFCI and the ordinary outlet are connected directly from the source.
8. What will happen if the source is connected to the output terminal of the GFCI instead of the input terminal?
A. The GFCI operates and functions the same
B. The GFCI causes a short circuit to the branch circuit
C. The GFCI will function as an ordinary outlet and can no longer protect against ground fault
D. The GFCI blinks its a light indicator that tells the electrician to rewire the circuit connection
9. When electricity from a hot wire passes through the ground wire, the GFCI will _____.
A. Restart automatically to reset the circuit
B. Trip and cut-off the flow of electricity to the circuit
C. Reset itself to cut off the flow of electricity to the ground
D. Blink its light indicator telling the user to start Testing and Resetting
10. For the light bulb to be switch controlled and GFCI protected, where should its terminals be connected?
A. To one of the switch outputs wires and output terminals of the GFCI combo
B. To each of the output terminals of the GFCI combo
C. To each of the input terminals of the GFCI switch combo
D. To one of the input terminals of the GFCI combo and one of the switch output wires



Additional Activity

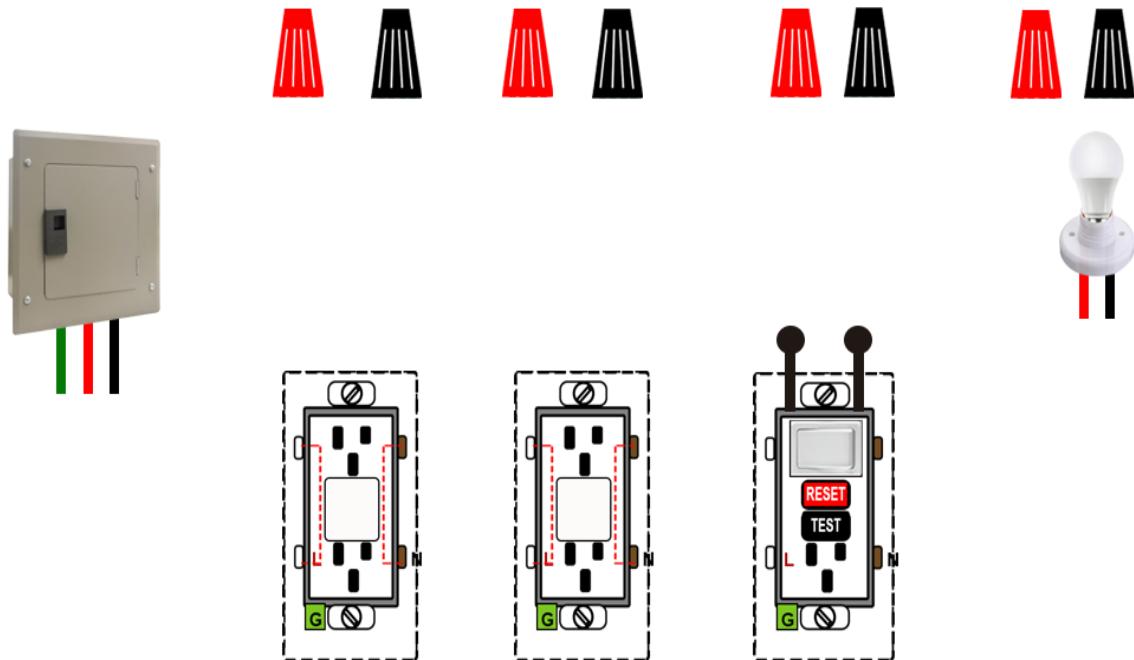
Use a separate sheet in answering the test. Be sure to write the following:

Name: _____ Year & Section: _____

Module Title: _____ Quarter: _____ Module #: _____ Week #: _____

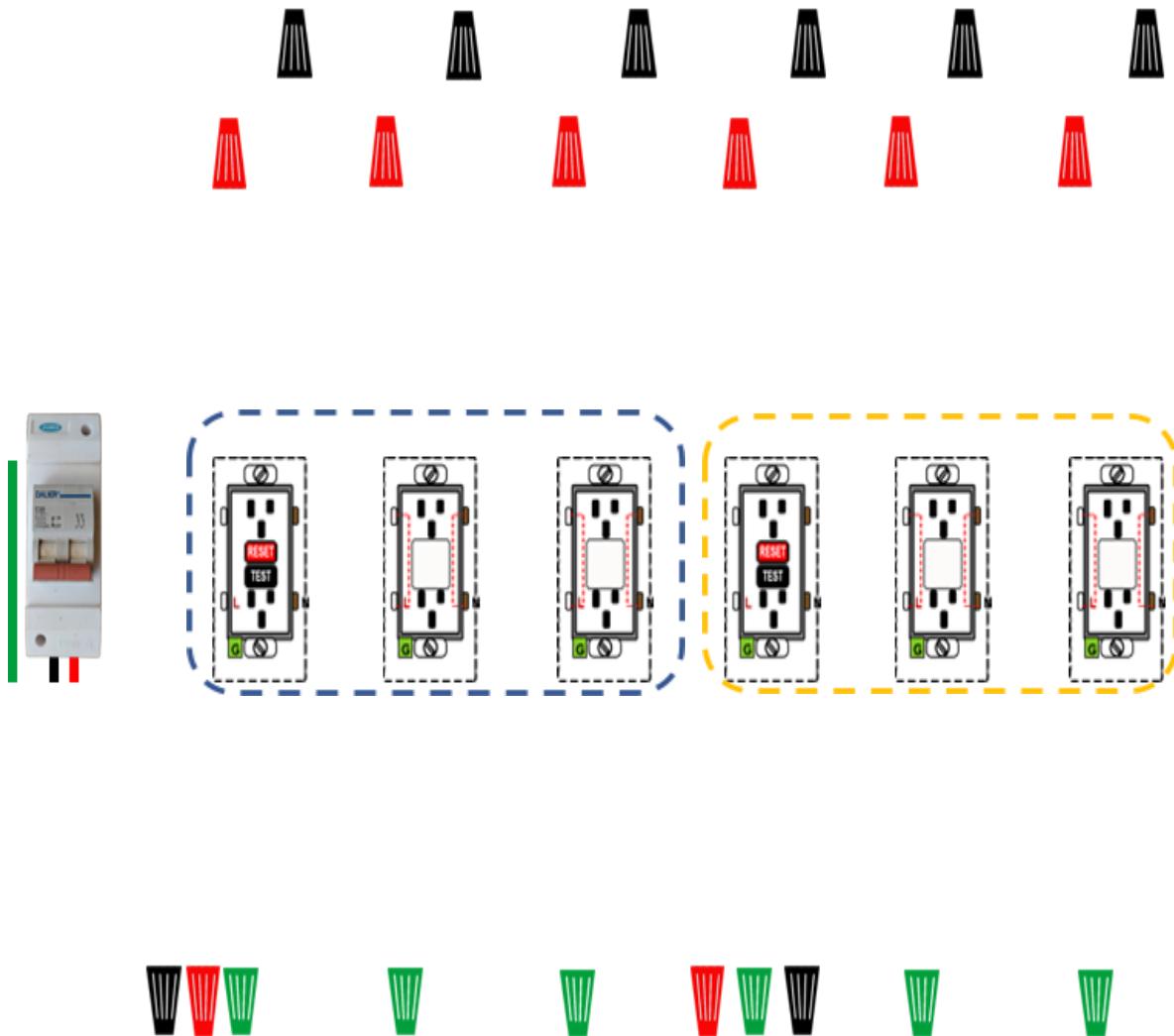
- A. **Directions:** Draw and Connect the Wiring diagram of GFCI combo switch with two GFCI-protected ordinary outlets and a light bulb controlled by a switch. (25 points)

Note: All outlets and the light bulb are GFCI protected but only the bulb is switch-controlled.

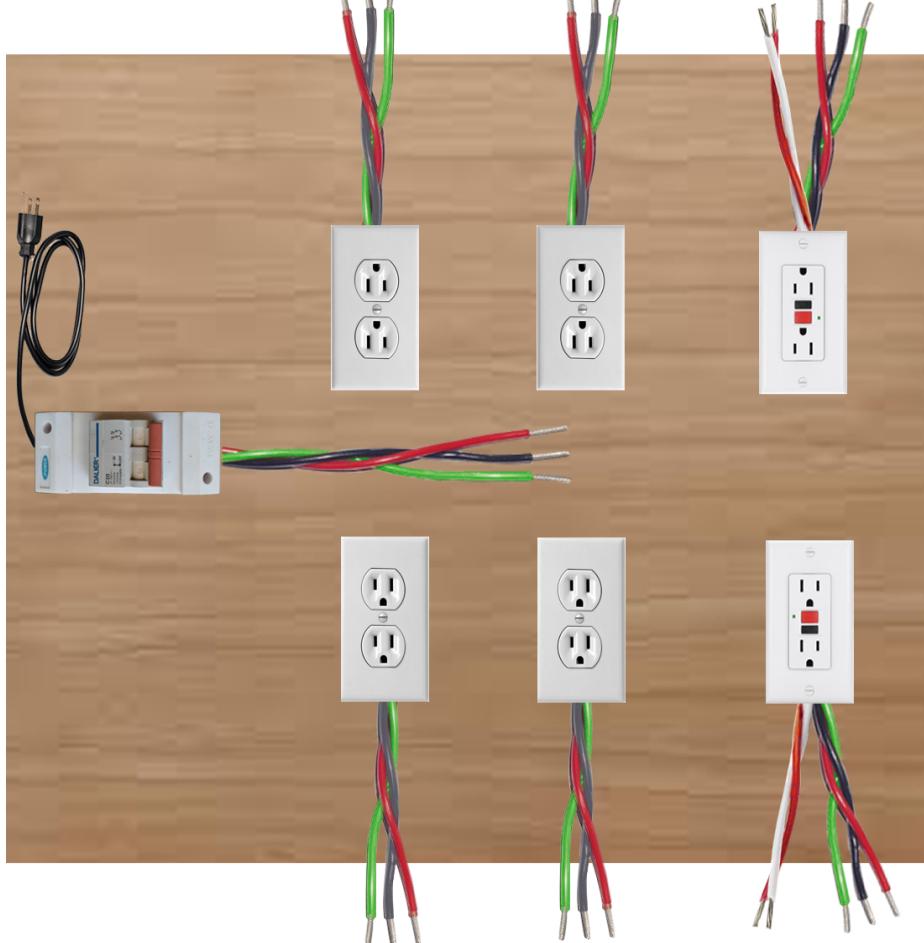


II. Directions: Construct a wiring diagram of two GFCI receptacles in a circuit. Each GFCI connects to two ordinary outlets to make them ground fault protected. Make an actual wiring connection of the diagram in A to the PWB in B. (25 points)

A.



B.



Explanation

References

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- GReviewz. (2019). Upgrading an Outlet to GFCI, video tutorial. Retrieved July 20, 2020, from <https://www.youtube.com/watch?v=fBcjP-EQA1Y>
- Mountaineer Outdoors. (2019). How to Wire a GFCI and Receptacle, video tutorial. Retrieved July 20, 2020, from https://www.youtube.com/watch?v=Fe9hwE8dN_k