Revised quiz answers

1. What are ROS Nodes?
ROS Nodes are programs that can communicate with other nodes and run with ROS functionality.

2. What are ROS Topics?
ROS topics are simply ways to communicate between nodes.

3. What are ROS Workspaces?
ROS workspaces are directories where you can organize and manage your ROS packages and dependencies.

4. What are ROS services?
Services are similar to topics in that they transfer information, but they request and provide information between nodes.

5. When would you use a ROS service vs a ROS topic?
You would use a ROS service when you want to request information and provide information and a ROS topic to simply transfer information.

6. What do you have to do every time you open a new terminal in order to use ROS?Hint: it will produce the error ROS2 command not found. Bonus: How do you get around this?
You would have to execute source /opt/ros/humble/setup.bash. You can resolve this by editing the bashrc by running nano ~/.bashrc, and adding the previous command to the bottom of the file.

7. I have just completed writing a node in my_robot_controller in a workspace called ros2_ws what does my path look like?
ros2_ws/src/my_robot_controller_/my_robot_controller/node_name.py.

8. If I were to have successfully established a ROS environment and run both talker and listener what would running rgt_graph produce?
I would show two nodes as bubbles, with an arrow going from the publisher to the listener.

9. When you create a new node what do you need to do in order to run a new node called tester found in the node_tester package and where would you run it?

10. What do you need to source to run custom nodes?
Source ~/.bashrc

11. If I have created a node called test_node in my_robot_controller and would like to execute it through the command line how would I make it executable from the command

line with the ros2 functionalities? Name it tester. Hint: you must add something to a .py file.
You add in the setup.py file, in the “entry_points” and “console_scripts”, section of the file, you can add “test_node = my_robot_controller.my_first_node:main” for example.

12. What packages do you need to import for every node?
You need to import rclypy and from rclpy.node import Node.

13. What are the arguments for ros publisher and subscriber?
It is message type, topic, and qos_profile for publisher, and type, topic, callback, and qos_profile for subscriber.

14. What does ros spin do and why do you need it?
It makes it so that the node keeps running in the background and you need to control c to terminate it.

15. What is a call back?
In ROS, a callback is a function that is executed in response to an event, likereceiving a message on a topic, handling a service request, or a timer event.

16. How do I see the ROS Topics running?
You can run the command: ros2 topic list

17. I noticed there is a topic called geometry message. How can I see what information is on that topic?
You can write ros2 topic info “topic_name”, and then depending on what that returns, you command ros2 interface show “return” which tells you what is being passed on that topic.

18. Once I know the name of a topic how do I know the message type of it?
You can use rqt_graph to see the name of the topic or you can do ros2 topic list. You can also do the above. You can write ros2 topic info “topic_name”, and then depending on what that returns, you command ros2 interface show “return” which tells you what is being passed on that topic.

19. What is the first thing you should do if you run into an error?
You should see if you can resolve it yourself using the error message and the internet.

20. In setup.py I add the line “test_node = my_robot_controller.my_first_node:main” what is the executable name, what is the package name, and what is my node name?
Test_node is the executable; my_robot_controller is the package name; node name is my_first_node.

21. How do you edit a python file in the terminal?
You can run the command: nano filename.py

22. What does chmod +x do?
It changes the permissions of a file, making it executable.

23. What is a src folder and why is it necessary?
The src folder is a directory within a ROS workspace that contains the source code for ROS packages.

24. How do you create a ros package?
You can type the command ros2 pkg create package_name –build-type ament_py –dependencies

25. Why should you include --symlink in colcon build?
You should include –symlink-install because it allows you to not have to do colcon build every time you edit your node or python file.

Past quiz answers

1. ROS nodes are essentially functions that you can program and then run that can perform a task within the ROS workspace.
2. ROS topics are areas of focus that are broader than nodes, but focus on a specific area of the ROS operating system.
3. ROS workspaces are virtual places in which you can build nodes that perform functions and connect a system together. These are essentially the projects that include all of the little nodes and topics.
4. ROS services are packages that can perform functions. They are used in workspaces and nodes.
5. You would use a ROS service over a ROS topic when using a more complicated robot operating system.
6. You type source ~/.bashrc. To get around doing this you can implement and add this to the file that execute the code everytime the terminal is opened.
7. ros2_ws/my_robot_controller/node
8. It would have two bubbles, or nodes, that were connected to each other, showing tha they are responding to each other.

9. You can run it in the terminal using something like ros2 “path” run “node_name”.
10. Source ~/.bashrc
11. You would add the lines {} something
12. You need to import ros2
13. The arguments for ros2 publisher and subscriber are
14. ROS spin is needed in order to keep a node running so that it doesn’t stop, so that all of the background code still runs and only ends when you hit control c.
15. A call back is when you would repeat a node, rerunning that program
16. You see the ROS topics running when there is code being put in the terminal
17. To see what is on that topic, you perform some function .open() in order to open it.
18. To know the message type of a topic, you would
19. You would first see if you can debug it yourself just based off of the error it provides, and then search up online, and then use AI if absolutely necessary, and then consult a friend or expert in these errors.
20. The executable name is my_first_node. The package name is my_robot_controller. The third name is
21. To edit a python file in terminal, you would write something like python “file name”
22. Chmod +x changes permissions
23. Src folder is needed in order to set up the background of a program. It executes some lines of code to set up a
24. To create a ROS package, you would write colcon build in the terminal
25. You include –symlink in colcon build so that you can bypass having to type in colcon build every time.