Quiz 01 - Introduction to DevOps.

Total Questions: 5, Time: 20 minutes.

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1. **What best describes a container image? [Check one] [1 Mark]**
   - **a.** A set of commands that describe how an image is built.
   - **b.** An immutable package that has software, application code, packages, and libraries. In addition, it might also contain an Operating system.
   - **c.** An immutable package that contains application code and related dependencies.

   `Correct answer: b`

2. **What is the difference between a Docker container and an image? [Check All that apply] [1 Mark]**
   - **a.** An image is a blueprint of how to create a container and a container is a running instance of that blueprint.
   - **b.** There can be multiple containers of the same image.
   - **c.** One container can be from multiple images.

   `Correct answer: a & b`

3. **What do you think is the benefit of containerization in general and what benefits does it offer from a DevOps perspective? Answer Briefly. [1 Mark]**

   `In general, containers offer portability & efficiency. We do not need to care about application dependencies and makes it easy to distribute our software.`

   `From a DevOps perspective, containers enable us to deliver secure, scalable applications faster and more efficiently.`

   `Full marks for anyone who has any written anything similar to above.`

4. **How does docker run a Linux container in a Windows environment? What's the underlying principle? [1 Mark]**

Historically it used to be through Virtual Machines. But now integration with Windows Subsystem for Linux 2 (WSL 2) has become the primary method.WSL 2 provides a true Linux kernel directly on the Windows host, eliminating the need for a separate VM.

Full marks for anyone who mentioned the term either Virtual machine or WSL or both

5. **You are a DevOps Engineer at a startup. The development team needs to deploy an application. The project has the following `dockerfile` [1 Mark]**

```
# Use Ubuntu as the base image
FROM ubuntu:latest

# Create a directory for the application
WORKDIR /app

# Copy the application folder into the container
COPY . /app

# Update package lists and install dependencies
RUN apt-get update \\
    && apt-get install -y curl \\
    && apt-get install -y gnupg2 \\
    && apt-get clean

# Install Node.js
RUN curl -sL <https://deb.nodesource.com/setup_14.x> | bash -
\\ && apt-get install -y nodejs

# Install application dependencies
RUN npm install

# Command to start the application
CMD ["node", "app.js"]
```

As a DevOps Engineer you know two things that are wrong with this `dockerfile`. Identify and fix them. **Hint:** There is nothing wrong in syntax. Its a functional `dockerfile`. Give a one liner for each change.

1. **We can move the COPY command before the RUN npm install. This way our cache remains valid till the line where we install node.js. Since the app source code will change, it will invalidate the cache for the lines below.**
2. **Instead of using a ubuntu base image and then installing node on it, we can simply use the nodejs official image which already has nodejs installed.**

Note: If we do point 2, point 1 becomes invalid.

Full marks for anyone who mentioned any one point.