

1. ADD vs COPY:

- a. COPY: The COPY instruction is used to copy files or directories from the host machine into the container. It takes two arguments: a source path (on the host) and a destination path (inside the container). COPY is straightforward and is preferred for copying local files or directories into the container.
- b. ADD: The ADD instruction is similar to COPY but has some additional capabilities. In addition to copying local files, ADD can also fetch remote URLs and auto-extract compressed files. While ADD provides more functionality, it's recommended to use COPY for simple file copying tasks to maintain clarity and avoid unexpected behaviors.

2. CMD vs ENTRYPOINT:

- a. CMD: The CMD instruction specifies the default command to be executed when a container starts. It can be overridden by providing arguments at runtime. CMD is typically used to provide default execution parameters or to specify the main application to run within the container.
- b. ENTRYPOINT: The ENTRYPOINT instruction specifies the executable or script to be run when the container starts. It's often used in conjunction with CMD to define the main entry point for the container. Unlike CMD, ENTRYPOINT's arguments are not overridden by command-line arguments provided at runtime. Instead, they are appended to the entry point command.

3. CMD/ENTRYPOINT vs RUN:

- a. CMD/ENTRYPOINT: CMD and ENTRYPOINT are instructions used to specify what command should be executed when a container starts. They define the runtime behavior of the container and are used to specify the main process or application to run within the container. These instructions are typically used to define the primary purpose of the container.
- b. RUN: The RUN instruction is used to execute shell commands or scripts during the image build process. It's used to install dependencies, set up the environment, or perform any necessary setup tasks. Unlike CMD and ENTRYPOINT, which define the container's runtime behavior, RUN commands are executed during the image build process to create the image itself. They are used to modify the underlying filesystem of the image.

4. **In summary**, ADD and COPY are used for copying files into the container, CMD and ENTRYPOINT are used to specify the main command to run when the container starts, and RUN is used to execute commands during the image build process. Each serves a different purpose in the Dockerfile and understanding their differences helps in creating efficient and maintainable Docker images.
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