**Task 1: Why Ports?**

IP addresses only identify devices, not specific services or applications.   
Ports direct traffic to the correct service on the device.

**Task 1: True/False Statements**

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| **Statement** | **Answer** | **Explanation** |
| Source/destination ports are the same | False | Source port is randomly chosen; destination port is fixed for services like HTTP (80). |
| Destination port changes every request | False | Destination port remains the same for a given service (e.g., 443 for HTTPS). |
| Source port changes (usually) | True | Clients typically use random ephemeral ports (32768–60999) for each connection. |
| Destination port differs per client | False | All clients use the same destination port to connect to the same service (e.g., port 25 for SMTP). |
| Source port differs per client | True | Clients are assigned unique source ports to avoid conflicts and support multiple connections. |

**Task 2: UDP vs TCP Comparison**

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| **Characteristic** | **UDP** | **TCP** |
| Connection-oriented? | No | Yes (uses 3-way handshake) |
| Reliable? | No (no ACKs) | Yes (acknowledgements, retransmit) |
| Ordered? | No | Yes (uses sequence numbers) |
| Speed | Fast (low latency) | Slower (due to reliability checks) |
| Overhead | Low | High (headers, ACKs, control flow) |

**Task 3: Application Examples**

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| **Application** | **Protocol** | **Explanation** |
| Video streaming | UDP | Minor packet loss is acceptable; low latency is more important. |
| Email | TCP | Reliability is crucial to ensure delivery without loss. |
| Online games | UDP | Real-time updates needed; can tolerate some packet drops. |
| File transfer | TCP | Accuracy and retransmission are essential. |
| Live audio (VoIP) | UDP | Skips are better than delays; real-time is prioritized. |
| Web browsing | TCP | Needs accurate delivery of HTML, CSS, and JS files. |
| DNS lookups | UDP | Fast query/response; simple retries if needed. |
| SSH (remote login) | TCP | Secure, reliable, and ordered communication is critical. |

**Task 4: Common Ports**

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| **Port** | **Service** | **Purpose** |
| 20/21 | FTP | File Transfer Protocol (data/control) |
| 22 | SSH | Secure shell for encrypted remote access |
| 23 | Telnet | Insecure remote login (unencrypted, outdated) |
| 25 | SMTP | Sends email between servers |
| 53 | DNS | Translates domain names into IP addresses |
| 80 | HTTP | Unencrypted web traffic (e.g., webpages) |
| 443 | HTTPS | Encrypted web traffic (secure via TLS/SSL) |