# HW4 Solutions

### Problem 7

Destination Address Range Link Interface

11000000

through (32 addresses) 0

11011111

10000000

through(64 addresses) 1

10111111

11100000

through (32 addresses) 2

11111111

00000000

through (128 addresses) 3

01111111

### Problem 11

Any IP address in range 128.119.40.128 to 128.119.40.191

Four equal size subnets: 128.119.40.64/28, 128.119.40.80/28, 128.119.40.96/28, 128.119.40.112/28

### Problem 14

The maximum size of data field in each fragment = 680 (because there are 20 bytes IP header). Thus the number of required fragments 

Each fragment will have Identification number 422. Each fragment except the last one will be of size 700 bytes (including IP header). The last datagram will be of size 360 bytes (including IP header). The offsets of the 4 fragments will be 0, 85, 170, 255. Each of the first 3 fragments will have flag=1; the last fragment will have flag=0.

### Problem 22

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| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.3 | Forward (3) |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.4 | Forward (4) |
| IP Src = 10.3.0.6; IP Dst = 10.2.0.3 | Forward (3) |
| IP Src = 10.3.0.6; IP Dst = 10.2.0.4 | Forward (4) |

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| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.3; port = TCP | Forward (3) |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.4; port = TCP | Forward (4) |

Note: Alternatively, can match IP Proto = 6 (indicating the upper layer protocol is TCP)

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| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.3 | Forward (3) |

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| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.3; port = UDP | Forward (3) |

Note: Alternatively, can match IP Proto = 17 (indicating the upper layer protocol is UDP)