

**GC UNIVERSITY LAHORE**

CS-DEPARTMENT

Computer Networks



Submitted to:-

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Submitted by:-

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**Semester : 6th**

**Section: CSA1**

**1. Class A: Subnetting 10.0.0.0/8**

* **Default mask**: /8 (255.0.0.0)
* To get at least 16 subnets, we borrow bits from the host portion.
* **Subnet mask:** Let's borrow 4 bits, making the mask /12 (255.240.0.0).
* Number of subnets = 2^4 = 16.
* Bits for hosts = 32 - 12 = 20.
* Hosts per subnet = 2^20 - 2 = 1,048,574.
* Subnet increment = 256 - 240 = 16 in the second octet.

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| --- | --- | --- |
| Subnet # | Network Address | Subnet Mask |
| 4 | 10.64.0.0/12 | 255.240.0.0 |
| 5 | 10.80.0.0/12 | 255.240.0.0 |
| 6 | 10.96.0.0/12 | 255.240.0.0 |
| 7 | 10.112.0.0/12 | 255.240.0.0 |
| 8 | 10.128.0.0/12 | 255.240.0.0 |
| 9 | 10.144.0.0/12 | 255.240.0.0 |
| 10 | 10.160.0.0/12 | 255.240.0.0 |
| 11 | 10.176.0.0/12 | 255.240.0.0 |
| 12 | 10.192.0.0/12 | 255.240.0.0 |
| 13 | 10.208.0.0/12 | 255.240.0.0 |
| 14 | 10.224.0.0/12 | 255.240.0.0 |
| 15 | 10.240.0.0/12 | 255.240.0.0 |

**1. Class B: Subnetting 172.16.0.0/16**

* **Default mask**: /16 (255.255.0.0)
* To get at least 16 subnets, we borrow bits from the host portion.
* **Subnet mask:** Let's borrow 4 bits, making the mask /20 (255.255.240.0).
* Number of subnets = 2^4 = 16.
* Bits for hosts = 32 - 20 = 12.
* Hosts per subnet = 2^12 - 2 = 4094.
* Subnet increment = 256 - 240 = 16 in the second octet.

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| --- | --- | --- |
| Subnet # | Network Address | Subnet Mask |
| 4 | 172.16.64.0/20 | 255.255.240.0 |
| 5 | 172.16.80.0/20 | 255.255.240.0 |
| 6 | 172.16.96.0/20 | 255.255.240.0 |
| 7 | 172.16.112.0/20 | 255.255.240.0 |
| 8 | 172.16.128.0/20 | 255.255.240.0 |
| 9 | 172.16.144.0/20 | 255.255.240.0 |
| 10 | 172.16.160.0/20 | 255.255.240.0 |
| 11 | 172.16.176.0/20 | 255.255.240.0 |
| 12 | 172.16.192.0/20 | 255.255.240.0 |
| 13 | 172.16.208.0/20 | 255.255.240.0 |
| 14 | 172.16.224.0/20 | 255.255.240.0 |
| 15 | 172.16.240.0/20 | 255.255.240.0 |

**1. Class C: Subnetting 192.168.1.0/24**

* **Default mask**: /24 (255.255.255.0)
* To get at least 16 subnets, we borrow bits from the host portion.
* **Subnet mask:** Let's borrow 4 bits, making the mask /28 (255.255.255.240).
* Number of subnets = 2^4 = 16.
* Bits for hosts = 32 - 28 = 4.
* Hosts per subnet = 2^4 - 2 = 14.
* Subnet increment = 256 - 240 = 16 in the second octet.

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| --- | --- | --- |
| Subnet # | Network Address | Subnet Mask |
| 4 | 192.168.1.64/28 | 255.255.255.240 |
| 5 | 192.168.1.80/28 | 255.255.255.240 |
| 6 | 192.168.1.96/28 | 255.255.255.240 |
| 7 | 192.168.1.112/28 | 255.255.255.240 |
| 8 | 192.168.1.128/28 | 255.255.255.240 |
| 9 | 192.168.1.144/28 | 255.255.255.240 |
| 10 | 192.168.1.160/28 | 255.255.255.240 |
| 11 | 192.168.1.176/28 | 255.255.255.240 |
| 12 | 192.168.1.192/28 | 255.255.255.240 |
| 13 | 192.168.1.208/28 | 255.255.255.240 |
| 14 | 192.168.1.224/28 | 255.255.255.240 |
| 15 | 192.168.1.240/28 | 255.255.255.240 |