

Project Akhir

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R Markdown

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

Impor dataset dari file

```
datacsv = read.csv("C:\\Users\\MSI USER\\Documents\\Semester 5\\Praktikum Data Science\\Project Akhir\\datacsv")
```

| | | model | price | launch | camera | selfie |
|-------|---------------------|-------------------------|--------|----------|--------|--------|
| ## 1 | | Huawei P50 Pro | \$907 | Jul 2021 | 144 | 106 |
| ## 2 | | Xiaomi Mi 11 Ultra | \$1200 | Mar 2021 | 143 | 94 |
| ## 3 | | Huawei Mate 40 Pro+ | \$1363 | Oct 2020 | 139 | NA |
| ## 4 | | Apple iPhone 13 Pro Max | \$1099 | Sep 2021 | 137 | 99 |
| ## 5 | | Apple iPhone 13 Pro | \$999 | Sep 2021 | 137 | 99 |
| ## 6 | | Huawei Mate 40 Pro | \$1199 | Oct 2020 | 136 | 104 |
| ## 7 | | Google Pixel 6 Pro | \$899 | Oct 2021 | 135 | 102 |
| ## 8 | | Vivo X70 Pro+ | \$833 | Sep 2021 | 135 | NA |
| ## 9 | Asus Smartphone for | Snapdragon Insiders | \$1499 | Jul 2021 | 133 | NA |
| ## 10 | | Xiaomi Mi 10 Ultra | \$803 | Aug 2020 | 133 | 88 |
| ## 11 | | Google Pixel 6 | \$599 | Oct 2021 | 132 | 97 |
| ## 12 | | Huawei P40 Pro | \$1099 | Mar 2020 | 132 | 103 |
| ## 13 | | Oppo Find X3 Pro | \$1149 | Mar 2021 | 131 | NA |
| ## 14 | | Vivo X70 Pro (MediaTek) | \$651 | Sep 2021 | 131 | NA |
| ## 15 | | Vivo X50 Pro+ | \$757 | Jun 2020 | 131 | NA |
| ## 16 | | Apple iPhone 13 | \$799 | Sep 2021 | 130 | 99 |
| ## 17 | | Apple iPhone 13 mini | \$699 | Sep 2021 | 130 | 99 |
| ## 18 | | Apple iPhone 12 Pro Max | \$1099 | Oct 2020 | 130 | 98 |
| ## 19 | | Apple iPhone 12 Pro | \$999 | Oct 2020 | 128 | 98 |
| ## 20 | | Vivo X60 Pro+ | \$757 | Dec 2020 | 128 | NA |
| ## 21 | | Xiaomi Mi 10 Pro | \$999 | Feb 2020 | 128 | 83 |
| ## 22 | | Oppo Find X2 Pro | \$1199 | May 2020 | 126 | 72 |
| ## 23 | Samsung Galaxy S20 | Ultra 5G (Exynos) | \$1359 | Feb 2020 | 126 | 100 |
| ## 24 | | Honor 30 Pro+ | \$757 | Apr 2020 | 125 | NA |
| ## 25 | | Apple iPhone 11 Pro Max | \$1099 | Sep 2019 | 124 | 92 |
| ## 26 | | OnePlus 9 Pro | \$969 | Mar 2021 | 124 | NA |

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|-------|---|--------|----------|-----|-----|
| ## 27 | Samsung Galaxy Z Fold3 5G | \$1799 | Aug 2021 | 124 | NA |
| ## 28 | Huawei Mate 30 Pro 5G | \$1045 | Sep 2019 | 123 | 84 |
| ## 29 | Samsung Galaxy S21 Ultra 5G (Snapdragon) | \$1199 | Jan 2021 | 123 | 99 |
| ## 30 | Apple iPhone 12 mini | \$699 | Oct 2020 | 122 | 98 |
| ## 31 | Apple iPhone 12 | \$799 | Oct 2020 | 122 | 98 |
| ## 32 | Honor V30 Pro | \$590 | Nov 2019 | 122 | 76 |
| ## 33 | Huawei Mate 30 Pro | \$1099 | Sep 2019 | 121 | 93 |
| ## 34 | Oppo Reno6 Pro 5G | \$799 | Sep 2021 | 121 | NA |
| ## 35 | Oppo Reno6 Pro+ | \$606 | May 2021 | 121 | NA |
| ## 36 | Samsung Galaxy S21 Ultra 5G (Exynos) | \$1259 | Jan 2021 | 121 | 100 |
| ## 37 | Xiaomi Mi CC9 Pro Premium Edition | \$530 | Nov 2019 | 121 | 77 |
| ## 38 | Asus Zenfone 8 | \$629 | May 2021 | 120 | NA |
| ## 39 | Google Pixel 5 | \$699 | Oct 2020 | 120 | 94 |
| ## 40 | Samsung Galaxy S21 FE 5G (Snapdragon) | \$699 | Jan 2022 | 120 | NA |
| ## 41 | Samsung Galaxy Note20 (Exynos) | \$959 | Aug 2020 | 120 | 100 |
| ## 42 | Samsung Galaxy Note20 Ultra 5G (Exynos) | \$1309 | Aug 2020 | 120 | 100 |
| ## 43 | Vivo X60 Pro 5G (Snapdragon) | \$799 | Mar 2021 | 120 | 91 |
| ## 44 | Xiaomi Mi 11 | \$799 | Dec 2020 | 120 | 85 |
| ## 45 | Xiaomi Redmi K30 Pro Zoom Edition | \$575 | Mar 2020 | 120 | NA |
| ## 46 | Apple iPhone 11 | \$699 | Sep 2019 | 119 | 91 |
| ## 47 | Samsung Galaxy S21+ 5G (Snapdragon) | \$999 | Jan 2021 | 119 | NA |
| ## 48 | Samsung Galaxy S21 5G (Snapdragon) | \$799 | Jan 2021 | 119 | NA |
| ## 49 | Asus Zenfone 8 Flip | \$799 | May 2021 | 118 | NA |
| ## 50 | OnePlus 8 Pro | \$899 | Apr 2020 | 118 | 93 |
| ## 51 | Samsung Galaxy S20+ (Exynos) | \$1009 | Feb 2020 | 118 | NA |
| ## 52 | Vivo X60 Pro 5G (Exynos) | \$799 | Mar 2021 | 118 | NA |
| ## 53 | Xiaomi Mi 10T Pro 5G | \$599 | Oct 2020 | 118 | 88 |
| ## 54 | Motorola Edge+ | \$999 | Apr 2020 | 117 | NA |
| ## 55 | Samsung Galaxy Note20 Ultra 5G (Snapdragon) | \$1299 | Aug 2020 | 117 | 97 |
| ## 56 | Samsung Galaxy Note 10+ (Exynos) | \$1109 | Aug 2019 | 117 | NA |
| ## 57 | TCL 20 Pro 5G | \$549 | Apr 2021 | 117 | NA |
| ## 58 | Xiaomi 11T Pro | \$699 | Sep 2021 | 117 | 91 |
| ## 59 | Huawei P30 Pro | \$999 | Mar 2019 | 116 | 89 |
| ## 60 | OnePlus Nord 2 5G | \$399 | Jul 2021 | 116 | NA |
| ## 61 | Samsung Galaxy S21 5G (Exynos) | \$859 | Jan 2021 | 116 | 98 |
| ## 62 | Samsung Galaxy S21+ 5G (Exynos) | \$1059 | Jan 2021 | 116 | NA |
| ## 63 | Samsung Galaxy Note 10+ 5G (Exynos) | \$1199 | Aug 2019 | 116 | 99 |
| ## 64 | Samsung Galaxy S10 5G (Exynos) | \$1199 | Feb 2019 | 116 | 97 |
| ## 65 | Asus ZenFone 7 Pro | \$799 | Dec 2020 | 115 | 101 |
| ## 66 | OnePlus 9 | \$729 | Mar 2021 | 115 | NA |
| ## 67 | Oppo Find X3 Neo | \$799 | Mar 2021 | 115 | NA |
| ## 68 | Oppo Reno 10x Zoom | \$799 | Jun 2019 | 115 | NA |
| ## 69 | Samsung Galaxy S20 FE (Exynos) | \$659 | Sep 2020 | 115 | NA |
| ## 70 | Sony Xperia 1 III | \$1299 | Apr 2021 | 115 | NA |
| ## 71 | OnePlus 7T Pro | \$759 | Oct 2019 | 114 | NA |
| ## 72 | OnePlus 7 Pro | \$669 | May 2019 | 114 | 86 |
| ## 73 | Vivo X51 5G | \$799 | Oct 2020 | 114 | 81 |
| ## 74 | Google Pixel 4 | \$799 | Oct 2019 | 113 | 92 |
| ## 75 | Honor 20 Pro | \$599 | May 2019 | 113 | 85 |
| ## 76 | Samsung Galaxy S10+ (Exynos) | \$1009 | Feb 2019 | 113 | 96 |
| ## 77 | Huawei P40 | \$799 | Mar 2020 | 112 | NA |
| ## 78 | Huawei Mate 20 Pro | \$999 | Dec 2018 | 112 | 75 |
| ## 79 | Oppo Reno5 Pro+ 5G | \$605 | Jan 2021 | 112 | NA |
| ## 80 | Samsung Galaxy Note20 (Snapdragon) | \$999 | Aug 2020 | 112 | NA |

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|--------|---------------------------|--------|-----|------|-----|----|
| ## 81 | Sony Xperia 1 II | \$1199 | Feb | 2020 | 112 | NA |
| ## 82 | Google Pixel 4a | \$349 | Aug | 2020 | 111 | NA |
| ## 83 | Huawei Mate 20 X | \$899 | Oct | 2018 | 111 | NA |
| ## 84 | OnePlus 8T | \$599 | Oct | 2020 | 111 | 82 |
| ## 85 | Sony Xperia 5 II | \$949 | Sep | 2020 | 111 | NA |
| ## 86 | Xiaomi Mi 11i | \$699 | Mar | 2021 | 111 | NA |
| ## 87 | Xiaomi Mi 11 Lite 5G | \$399 | Mar | 2021 | 111 | NA |
| ## 88 | LG Wing | \$999 | Sep | 2020 | 110 | NA |
| ## 89 | Xiaomi Mi 9 | \$469 | Feb | 2019 | 110 | NA |
| ## 90 | Huawei P20 Pro | \$899 | Mar | 2018 | 109 | 72 |
| ## 91 | Samsung Galaxy Z Fold2 5G | \$1999 | Aug | 2020 | 109 | NA |
| ## 92 | OnePlus Nord | \$399 | Jul | 2020 | 108 | NA |
| ## 93 | Oppo A94 5G | \$359 | Apr | 2021 | 108 | NA |
| ## 94 | Oppo Reno4 Pro 5G | \$799 | Jun | 2020 | 108 | NA |
| ## 95 | Xiaomi 11T | \$499 | Sep | 2021 | 108 | 88 |
| ## 96 | Xiaomi Redmi K40 Pro+ | \$560 | Feb | 2021 | 108 | NA |
| ## 97 | Oppo Reno6 5G | \$499 | May | 2021 | 107 | 80 |
| ## 98 | ZTE Axon 30 Ultra | \$749 | Apr | 2021 | 107 | NA |
| ## 99 | Apple iPhone XS Max | \$1099 | Sep | 2018 | 106 | 82 |
| ## 100 | Realme GT Neo 2 5G | \$469 | Sep | 2021 | 106 | NA |
| ## 101 | Xiaomi Redmi Note 10 Pro | \$279 | Mar | 2021 | 106 | NA |
| ## 102 | Motorola Edge 20 Pro | \$699 | Jul | 2021 | 105 | NA |
| ## 103 | Oppo Find X3 Lite | \$449 | Mar | 2021 | 105 | NA |
| ## 104 | Oppo Reno4 5G | \$549 | Oct | 2020 | 105 | NA |
| ## 105 | Oppo Find X2 Neo | \$699 | May | 2020 | 105 | NA |
| ## 106 | Realme GT Neo | \$273 | Mar | 2021 | 105 | NA |
| ## 107 | Samsung Galaxy A72 | \$449 | Mar | 2021 | 105 | NA |
| ## 108 | Samsung Galaxy Z Flip | \$1380 | Feb | 2020 | 105 | 83 |
| ## 109 | Vivo V21 5G | \$419 | Apr | 2021 | 105 | NA |
| ## 110 | Asus ZenFone 6 | \$499 | May | 2019 | 104 | 98 |
| ## 111 | Apple iPhone SE (2020) | \$399 | Apr | 2020 | 103 | 84 |
| ## 112 | HTC U12+ | \$799 | May | 2018 | 103 | NA |
| ## 113 | POCO X3 NFC | \$229 | Sep | 2020 | 103 | NA |
| ## 114 | Realme 8 Pro | \$299 | Mar | 2021 | 103 | NA |
| ## 115 | Samsung Galaxy Note 9 | \$1009 | Aug | 2018 | 103 | 92 |
| ## 116 | Xiaomi Mi MIX 3 | \$599 | Oct | 2018 | 103 | 84 |
| ## 117 | Google Pixel 3 | \$799 | Oct | 2018 | 102 | 92 |
| ## 118 | OnePlus Nord CE 5G | \$299 | Jun | 2021 | 102 | NA |
| ## 119 | Samsung Galaxy A52 5G | \$499 | Mar | 2021 | 102 | NA |
| ## 120 | Xiaomi Redmi K20 Pro | \$379 | May | 2019 | 102 | NA |
| ## 121 | Apple iPhone XR | \$749 | Sep | 2018 | 101 | NA |
| ## 122 | Google Pixel 3a | \$399 | May | 2019 | 101 | NA |
| ## 123 | LG V60 ThinQ 5G | \$799 | Feb | 2020 | 100 | NA |
| ## 124 | Oppo Reno5 Pro 5G | \$515 | Dec | 2020 | 100 | NA |
| ## 125 | Samsung Galaxy S9+ | \$959 | Mar | 2018 | 100 | 81 |
| ## 126 | Google Pixel 2 | \$649 | Oct | 2017 | 99 | 77 |
| ## 127 | LG G8 ThinQ | \$819 | Feb | 2019 | 99 | NA |
| ## 128 | Xiaomi Mi 8 | \$499 | May | 2018 | 99 | NA |
| ## 129 | OnePlus 6T | \$549 | Oct | 2018 | 98 | NA |
| ## 130 | Xiaomi Mi 10T 5G | \$499 | Oct | 2020 | 98 | NA |
| ## 131 | Apple iPhone X | \$999 | Nov | 2017 | 97 | 71 |
| ## 132 | LG V40 ThinQ | \$899 | Oct | 2018 | 97 | NA |
| ## 133 | Lenovo Z6 Pro | \$499 | Sep | 2019 | 97 | 75 |
| ## 134 | OnePlus 6 | \$529 | May | 2018 | 96 | NA |

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|--------|-------------------------|--------|-----|------|----|-----|
| ## 135 | Asus ROG Phone 2 | \$899 | Mar | 2019 | 95 | NA |
| ## 136 | Realme X2 Pro | \$399 | Oct | 2019 | 95 | 74 |
| ## 137 | Sony Xperia 5 | \$799 | Sep | 2019 | 95 | 79 |
| ## 138 | Apple iPhone 8 Plus | \$799 | Sep | 2017 | 94 | NA |
| ## 139 | Samsung Galaxy Note 8 | \$1009 | Aug | 2017 | 94 | NA |
| ## 140 | Vivo Y72 5G | \$319 | Mar | 2021 | 94 | NA |
| ## 141 | Xiaomi Redmi Note 10S | \$199 | Mar | 2021 | 92 | NA |
| ## 142 | Xiaomi Pocophone F1 | \$329 | Aug | 2018 | 91 | NA |
| ## 143 | Asus ZenFone 5 | \$399 | Aug | 2018 | 90 | NA |
| ## 144 | General Mobile GM9 Pro | \$400 | Jan | 2019 | 90 | NA |
| ## 145 | Google Pixel | \$649 | Oct | 2016 | 90 | NA |
| ## 146 | HTC U11 | \$649 | Jul | 2017 | 90 | NA |
| ## 147 | Samsung Galaxy A12 | \$179 | Nov | 2020 | 90 | NA |
| ## 148 | Vivo X20 Plus | \$530 | Jan | 2018 | 90 | NA |
| ## 149 | Xiaomi Mi Note 3 | \$349 | Sep | 2017 | 90 | NA |
| ## 150 | Samsung Galaxy A22 5G | \$259 | Jun | 2021 | 89 | NA |
| ## 151 | Samsung Galaxy S7 Edge | \$799 | Feb | 2016 | 89 | NA |
| ## 152 | Apple iPhone 7 Plus | \$769 | Sep | 2016 | 88 | NA |
| ## 153 | Samsung Galaxy A71 5G | \$599 | Apr | 2020 | 88 | NA |
| ## 154 | Samsung Galaxy A9 | \$599 | Oct | 2018 | 88 | NA |
| ## 155 | Motorola One Zoom | \$449 | Sep | 2019 | 87 | NA |
| ## 156 | Samsung Galaxy A51 5G | \$499 | Apr | 2020 | 87 | NA |
| ## 157 | Sony Xperia 1 | \$999 | Feb | 2019 | 87 | 78 |
| ## 158 | Vsmart Live | \$304 | Jul | 2019 | 87 | NA |
| ## 159 | ZTE Axon 20 5G | \$449 | Sep | 2020 | 87 | 26 |
| ## 160 | Crosscall Trekker-X4 | \$699 | Oct | 2018 | 86 | NA |
| ## 161 | Nokia 8.3 5G | \$699 | Mar | 2020 | 86 | NA |
| ## 162 | LG G7 ThinQ | \$749 | May | 2018 | 85 | NA |
| ## 163 | Nokia 7.2 | \$349 | Sep | 2019 | 85 | 78 |
| ## 164 | Nokia 9 PureView | \$699 | Feb | 2019 | 85 | NA |
| ## 165 | Black Shark 2 | \$549 | Mar | 2019 | 84 | NA |
| ## 166 | LG V30 | \$829 | Aug | 2017 | 84 | NA |
| ## 167 | Samsung Galaxy A71 | \$479 | Dec | 2019 | 84 | 83 |
| ## 168 | Xiaomi Redmi Note 8 Pro | \$249 | Sep | 2019 | 84 | NA |
| ## 169 | Motorola Moto Z2 Force | \$720 | Jul | 2017 | 82 | NA |
| ## 170 | Samsung Galaxy S6 Edge | \$849 | Mar | 2015 | 82 | NA |
| ## 171 | Motorola Moto G7 Plus | \$329 | Feb | 2019 | 80 | NA |
| ## 172 | Crosscall Core-X4 | \$449 | Feb | 2020 | 79 | NA |
| ## 173 | Samsung Galaxy A50 | \$349 | Feb | 2019 | 76 | NA |
| ## 174 | Apple iPhone 6 | \$649 | Sep | 2014 | 73 | NA |
| ## 175 | Google Nexus 6P | \$649 | Sep | 2015 | 73 | NA |
| ## 176 | Meizu Pro 7 Plus | \$550 | Jul | 2017 | 71 | NA |
| ## 177 | Lava Z25 | \$154 | Mar | 2017 | 70 | NA |
| ## 178 | Samsung Galaxy S5 | \$679 | Apr | 2014 | 70 | NA |
| ## 179 | Motorola Moto G5S | \$249 | Aug | 2017 | 69 | NA |
| ## 180 | Apple iPhone 5s | \$649 | Sep | 2013 | 68 | NA |
| ## 181 | Nokia 8 | \$599 | Oct | 2017 | 68 | NA |
| ## 182 | Wiko View 3 Pro | \$249 | May | 2019 | 67 | NA |
| ## 183 | Fairphone 3 | \$450 | Sep | 2019 | 66 | NA |
| ## 184 | Altice S61 | \$159 | Jun | 2018 | 56 | NA |
| ## 185 | Huawei nova 6 5G | \$576 | Dec | 2019 | NA | 100 |
| ## 186 | Samsung Galaxy S8 | \$809 | Mar | 2017 | NA | 73 |
| ## 187 | Meitu T9 | \$515 | Jun | 2018 | NA | 69 |
| ## 188 | Meitu V6 | \$772 | Nov | 2017 | NA | 59 |

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|--------|---------------------------|--------|----------|----|----|
| ## 189 | Intex Aqua Selfie | \$89 | Jul 2017 | NA | 22 |
| ## 190 | Black Shark 4S Pro | \$727 | Oct 2021 | NA | NA |
| ## 191 | Honor Magic3 Pro + | \$1212 | Aug 2021 | NA | NA |
| ## 192 | Black Shark 4 Pro | \$605 | Mar 2021 | NA | NA |
| ## 193 | Xiaomi Mi 10S | \$499 | Mar 2021 | NA | NA |
| ## 194 | Asus ROG Phone 5 | \$799 | Mar 2021 | NA | NA |
| ## 195 | Asus ROG Phone 3 | \$999 | Aug 2020 | NA | NA |
| ## 196 | Lenovo Legion Phone 2 Pro | \$799 | Apr 2021 | NA | NA |
| ## 197 | Xiaomi Redmi K40 Gaming | \$303 | Apr 2021 | NA | NA |
| ## 198 | OnePlus 8 | \$699 | Apr 2020 | NA | NA |
| ## 199 | Nubia RedMagic 6 Pro | \$699 | Apr 2021 | NA | NA |
| ## 200 | Nubia Red Magic 5S | \$579 | Jul 2020 | NA | NA |
| ## 201 | Lenovo Legion Phone Pro | \$899 | Jul 2020 | NA | NA |
| ## 202 | Realme GT 5G | \$449 | Mar 2021 | NA | NA |
| ## 203 | Motorola Razr | \$1499 | Nov 2020 | NA | NA |
| ## 204 | Black Shark 3 Pro | \$899 | Mar 2020 | NA | NA |
| ## 205 | Black Shark 2 Pro | \$599 | Jul 2019 | NA | NA |
| ## 206 | Nubia Red Magic 3S | \$479 | Sep 2019 | NA | NA |
| ## 207 | TCL 10 Pro | \$449 | Jun 2020 | NA | NA |
| ## 208 | Microsoft Surface Duo | \$1399 | Aug 2020 | NA | NA |
| ## 209 | Fairphone 4 | \$579 | Oct 2021 | NA | NA |
| ## 210 | Realme C21 | \$119 | Mar 2021 | NA | NA |
| ## 211 | Samsung Galaxy M51 | \$399 | Aug 2020 | NA | NA |
| ## 212 | Xiaomi Redmi Note 10 | \$199 | Mar 2021 | NA | NA |
| ## 213 | Oppo A74 | \$249 | Apr 2021 | NA | NA |
| ## 214 | Wiko Power U30 | \$179 | Apr 2021 | NA | NA |
| ## 215 | Oppo A74 5G | \$299 | Apr 2021 | NA | NA |
| ## 216 | Xiaomi Redmi Note 10 5G | \$229 | Mar 2021 | NA | NA |
| ## 217 | Oppo A54 5G | \$259 | Apr 2021 | NA | NA |
| ## 218 | Vivo Y20s | \$199 | Oct 2020 | NA | NA |
| ## 219 | Huawei P40 Lite | \$279 | Feb 2020 | NA | NA |
| ## 220 | Wiko Power U20 | \$159 | Jan 2021 | NA | NA |
| ## 221 | Motorola Moto G9 Power | \$229 | Nov 2020 | NA | NA |
| ## 222 | Realme C11 | \$119 | Jun 2020 | NA | NA |
| ## 223 | Xiaomi Redmi 9 | \$159 | Jun 2020 | NA | NA |
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| ## 3 | NA | NA | NA | | |
| ## 4 | 75 | 99 | 89 | | |
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| ## 7 | 71 | 90 | NA | | |
| ## 8 | 66 | 91 | NA | | |
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| ## 16 | 75 | 93 | 74 | | |
| ## 17 | 75 | 90 | 62 | | |
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| ## 26 | 69 | 89 | 65 |
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| ## 44 | 68 | 87 | 49 |
| ## 45 | NA | NA | NA |
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| ## 48 | 70 | NA | 69 |
| ## 49 | NA | NA | 63 |
| ## 50 | 67 | 88 | NA |
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| ## 57 | NA | 89 | NA |
| ## 58 | 71 | 87 | 81 |
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| ## 67 | 61 | 85 | 81 |
| ## 68 | NA | NA | NA |
| ## 69 | NA | NA | NA |
| ## 70 | 66 | 86 | NA |
| ## 71 | NA | NA | NA |
| ## 72 | 65 | NA | NA |

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|--------|----|----|----|
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| ## 78 | NA | NA | NA |
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| ## 81 | 57 | NA | NA |
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| ## 83 | 75 | NA | NA |
| ## 84 | NA | 89 | 71 |
| ## 85 | NA | 78 | NA |
| ## 86 | 66 | 83 | NA |
| ## 87 | NA | NA | 67 |
| ## 88 | NA | 88 | NA |
| ## 89 | NA | NA | NA |
| ## 90 | NA | NA | NA |
| ## 91 | 66 | NA | NA |
| ## 92 | NA | NA | NA |
| ## 93 | NA | NA | 82 |
| ## 94 | 61 | NA | NA |
| ## 95 | 70 | 89 | 89 |
| ## 96 | 66 | NA | NA |
| ## 97 | 58 | 80 | 96 |
| ## 98 | 63 | 78 | NA |
| ## 99 | 74 | NA | NA |
| ## 100 | 60 | 81 | 94 |
| ## 101 | NA | NA | 84 |
| ## 102 | 55 | 80 | 76 |
| ## 103 | 53 | 79 | 68 |
| ## 104 | NA | NA | NA |
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| ## 106 | NA | NA | NA |
| ## 107 | NA | NA | 85 |
| ## 108 | NA | NA | NA |
| ## 109 | NA | NA | NA |
| ## 110 | NA | NA | NA |
| ## 111 | 70 | NA | NA |
| ## 112 | NA | NA | NA |
| ## 113 | 63 | NA | NA |
| ## 114 | NA | NA | NA |
| ## 115 | NA | NA | NA |
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| ## 117 | NA | NA | NA |
| ## 118 | NA | NA | 89 |
| ## 119 | 69 | 79 | 67 |
| ## 120 | NA | NA | NA |
| ## 121 | NA | NA | NA |
| ## 122 | NA | NA | NA |
| ## 123 | 65 | NA | NA |
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| | | | | |
|----|-----|----|----|----|
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| ## | 130 | NA | NA | NA |
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| ## | 140 | NA | NA | 89 |
| ## | 141 | NA | NA | 86 |
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| ## | 171 | NA | NA | NA |
| ## | 172 | NA | NA | NA |
| ## | 173 | NA | NA | NA |
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| ## | 176 | NA | NA | NA |
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| ## | 178 | NA | NA | NA |
| ## | 179 | NA | NA | NA |
| ## | 180 | NA | NA | NA |


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## 181    NA    NA    NA
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## 185    NA    NA    NA
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## 197    68    NA    NA
## 198    68    NA    NA
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## 203    57    NA    NA
## 204    55    61    NA
## 205    51    NA    NA
## 206    50    NA    NA
## 207    NA    83    NA
## 208    NA    74    NA
## 209    NA    69    NA
## 210    NA    43    62
## 211    NA    NA    88
## 212    NA    NA    87
## 213    NA    NA    86
## 214    NA    NA    86
## 215    NA    NA    78
## 216    NA    NA    78
## 217    NA    NA    76
## 218    NA    NA    75
## 219    NA    NA    73
## 220    NA    NA    70
## 221    NA    NA    70
## 222    NA    NA    61
## 223    NA    NA    54
```

Isi data yang hilang dari dataset dengan menggunakan median

```
medcamera <- median(datacsv$camera, na.rm = TRUE)
print(medcamera)
```

```
## [1] 108
```

```

datacsv[is.na(datacsv$camera), "camera"] <- medcamera

medselfie <- median(datacsv$selfie, na.rm = TRUE)
print(medselfie)

```

```
## [1] 91
```

```

datacsv[is.na(datacsv$selfie), "selfie"] <- medselfie

medaudio <- median(datacsv$audio, na.rm = TRUE)
print(medaudio)

```

```
## [1] 66
```

```

datacsv[is.na(datacsv$audio), "audio"] <- medaudio

meddisplay <- median(datacsv$display, na.rm = TRUE)
print(meddisplay)

```

```
## [1] 85.5
```

```

datacsv[is.na(datacsv$display), "display"] <- meddisplay

medbattery <- median(datacsv$battery, na.rm = TRUE)
print(medbattery)

```

```
## [1] 74.5
```

```
datacsv[is.na(datacsv$battery), "battery"] <- medbattery
```

```
##Buat variabel baru dengan nilai yang berisi rata-rata nilai fitur hp
```

```

summary <- (datacsv$camera + datacsv$selfie + datacsv$audio + datacsv$display + datacsv$battery)/5
datacsv$summary = summary

```

```
##Tampilkan 6 model hp terbaik menurut rata-rata rating
```

```

sum <- order(datacsv$summary, decreasing = TRUE)
head(datacsv$model[sum])

```

```

## [1] "Apple iPhone 13 Pro Max" "Apple iPhone 13 Pro"
## [3] "Huawei P50 Pro"           "Google Pixel 6 Pro"
## [5] "Apple iPhone 13"         "Apple iPhone 12 Pro Max"

```

Boxplot masing-masing variabel

```
summary(datacsv$camera)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      56.0   98.5   108.0   106.7   117.0   144.0
```

```
summary(datacsv$selfie)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      22.00   91.00   91.00   89.73   91.00   106.00
```

```
summary(datacsv$audio)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      41.00   66.00   66.00   65.77   66.00   81.00
```

```
summary(datacsv$display)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      43.0    85.5    85.5    84.6    85.5    99.0
```

```
summary(datacsv$battery)
```

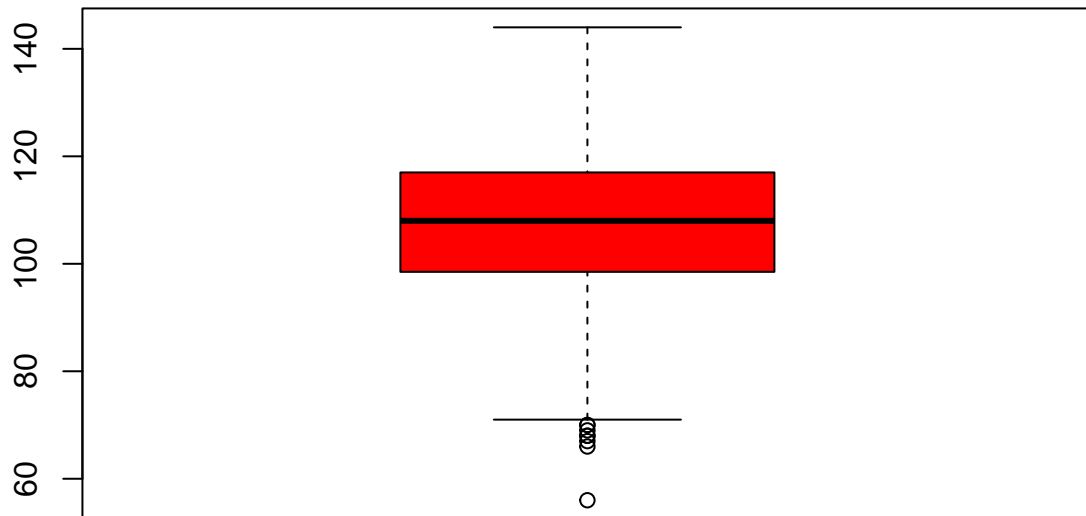
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      49.00   74.50   74.50   74.46   74.50   96.00
```

```
summary(datacsv$summary)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      67.80   81.40   84.20   84.26   86.85   99.80
```

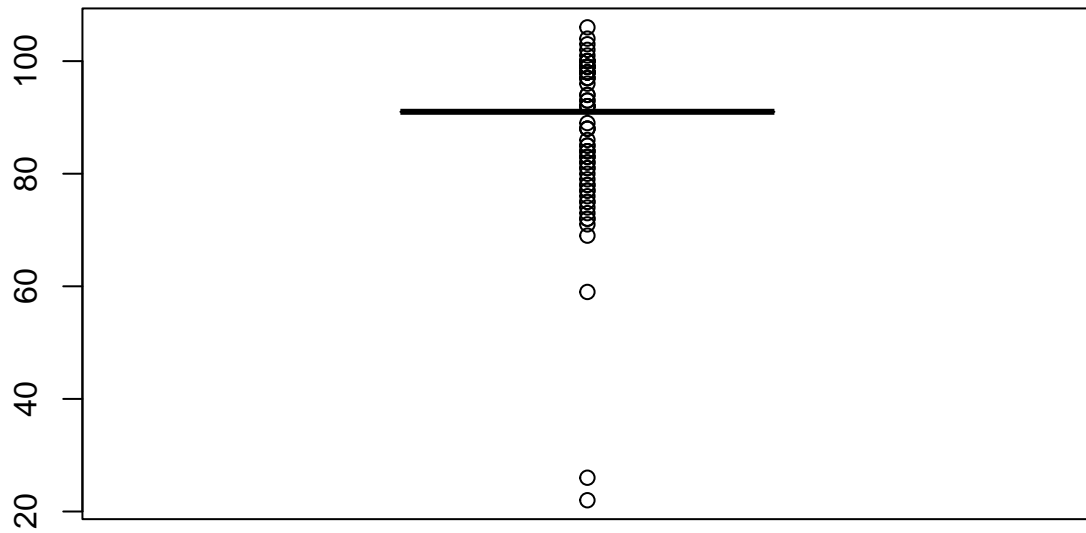
```
boxplot(datacsv$camera, main="Boxplot variabel kamera belakang HP", col = "red")
```

Boxplot variabel kamera belakang HP



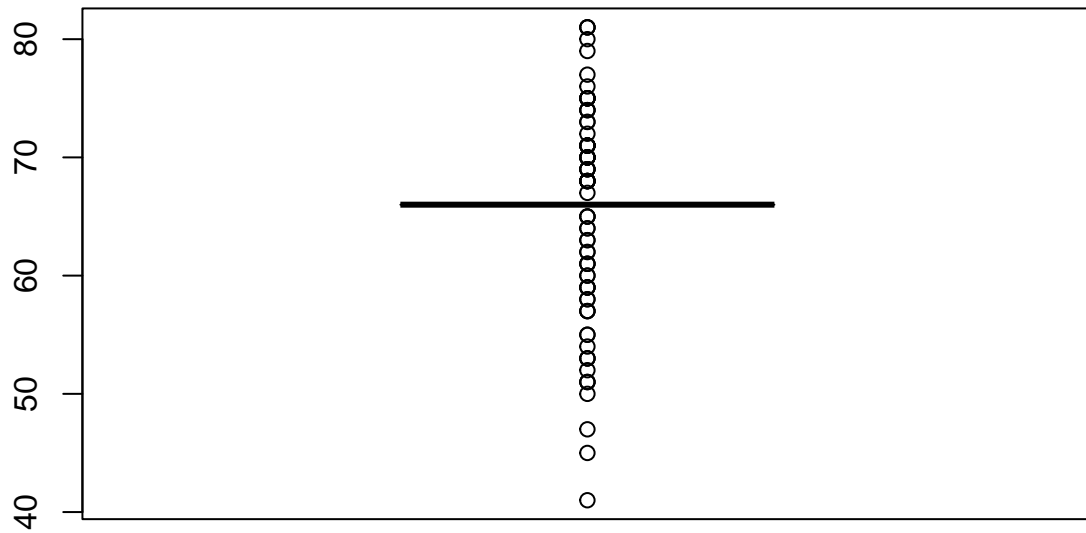
```
boxplot(datacsv$selfie, main="Boxplot variabel kamera depan HP", col = "green")
```

Boxplot variabel kamera depan HP



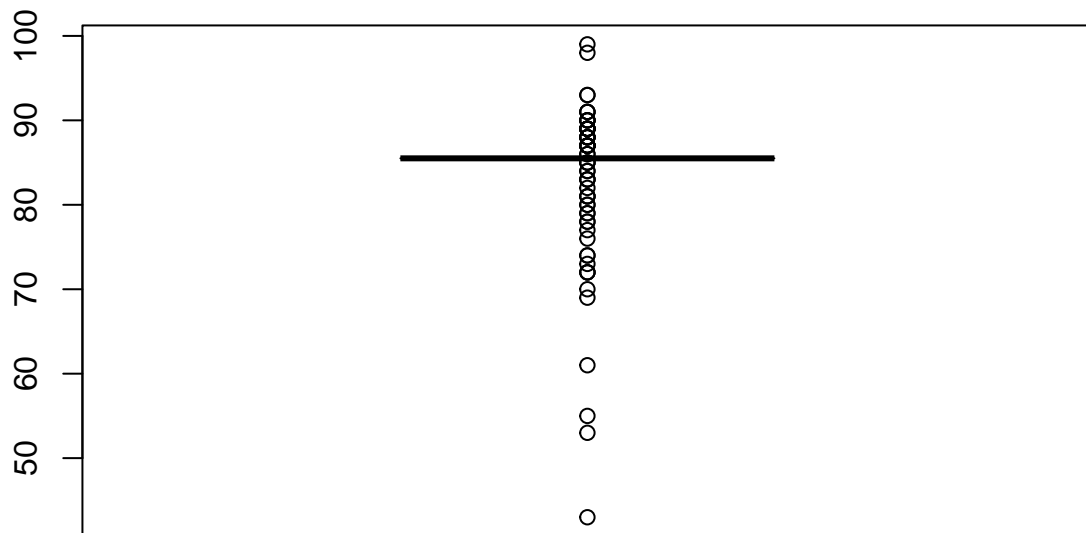
```
boxplot(datacsv$audio, main="Boxplot variabel speaker HP", col = "blue")
```

Boxplot variabel speaker HP



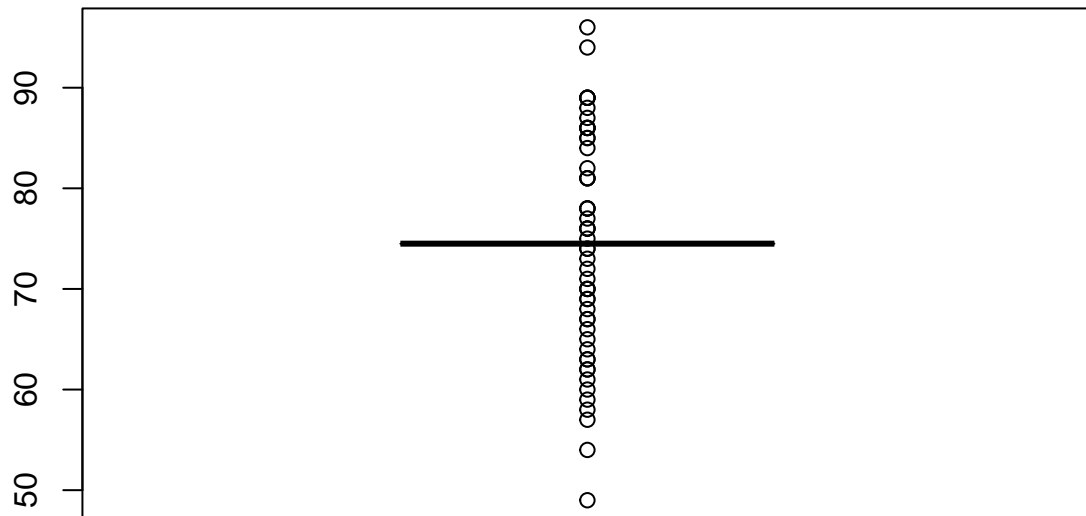
```
boxplot(datacsv$display, main="Boxplot variabel layar HP", col = "yellow")
```

Boxplot variabel layar HP



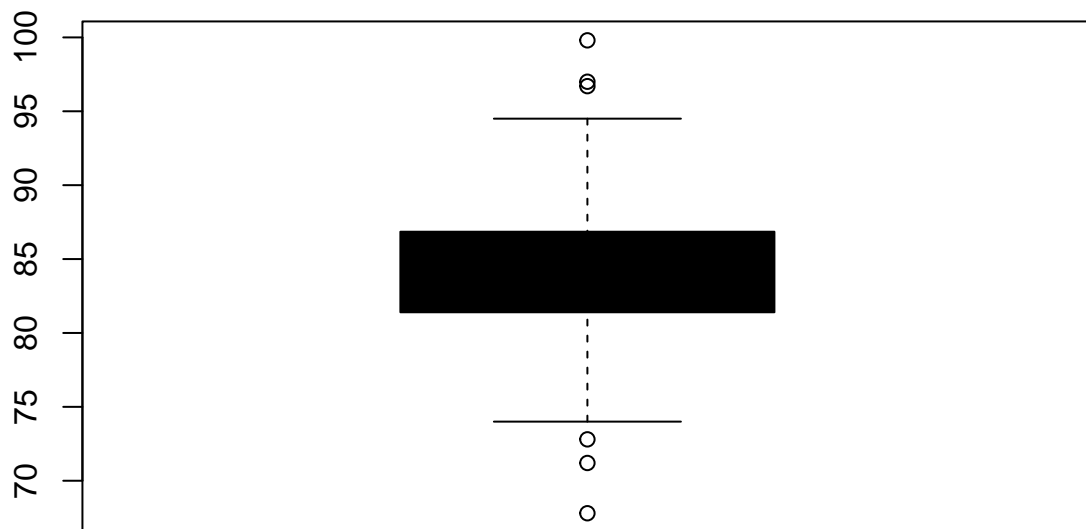
```
boxplot(datacsv$baterai, main="Boxplot variabel baterai HP", col = "purple")
```

Boxplot variabel baterai HP



```
boxplot(datacsv$summary, main="Boxplot variabel rata-rata rating HP", col = "black")
```

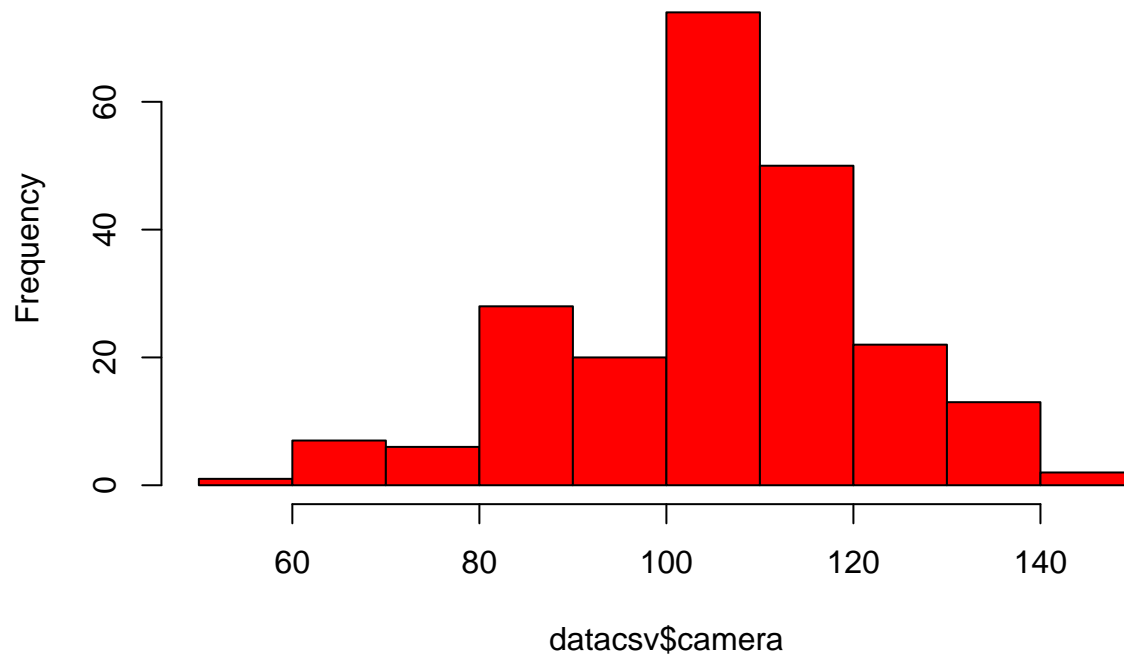

Boxplot variabel rata-rata rating HP



Histogram masing-masing variabel

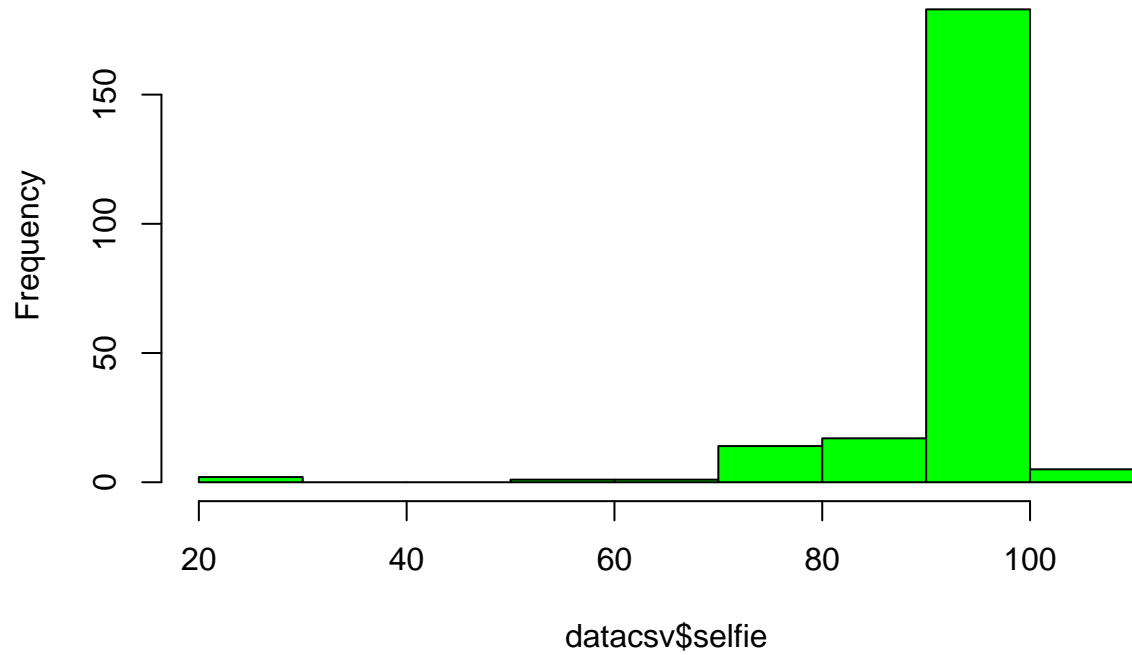
```
hist(datacsv$camera, main="Histogram variabel kamera belakang HP", col = "red")
```

Histogram variabel kamera belakang HP



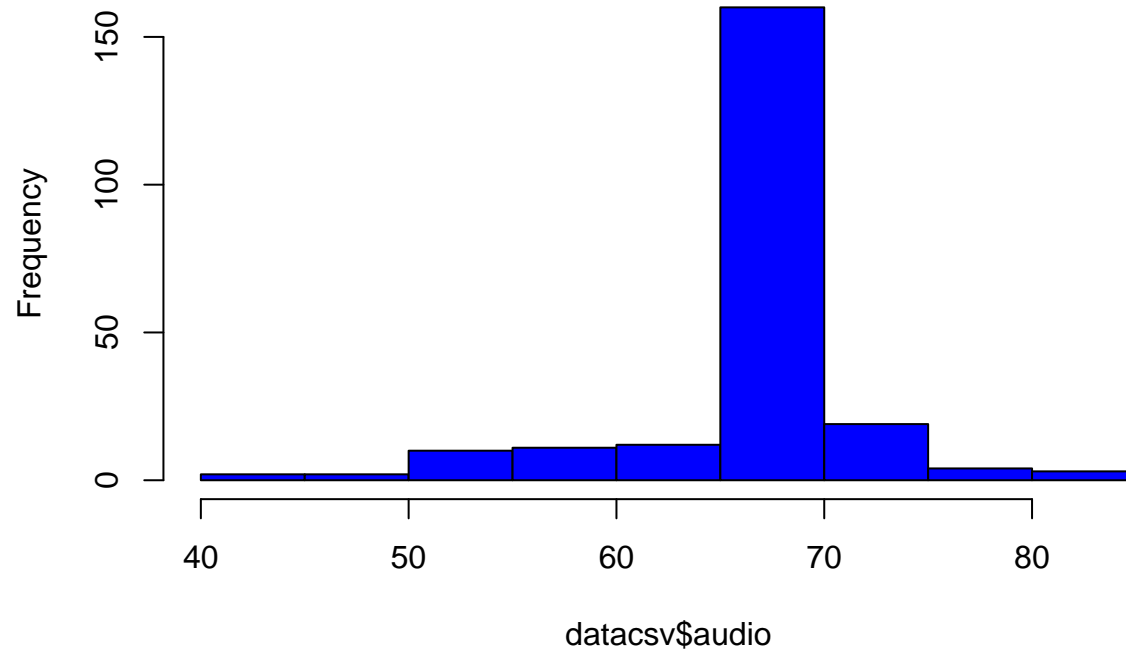
```
hist(datacsv$selfie, main="Histogram variabel kamera depan HP", col = "green")
```

Histogram variabel kamera depan HP



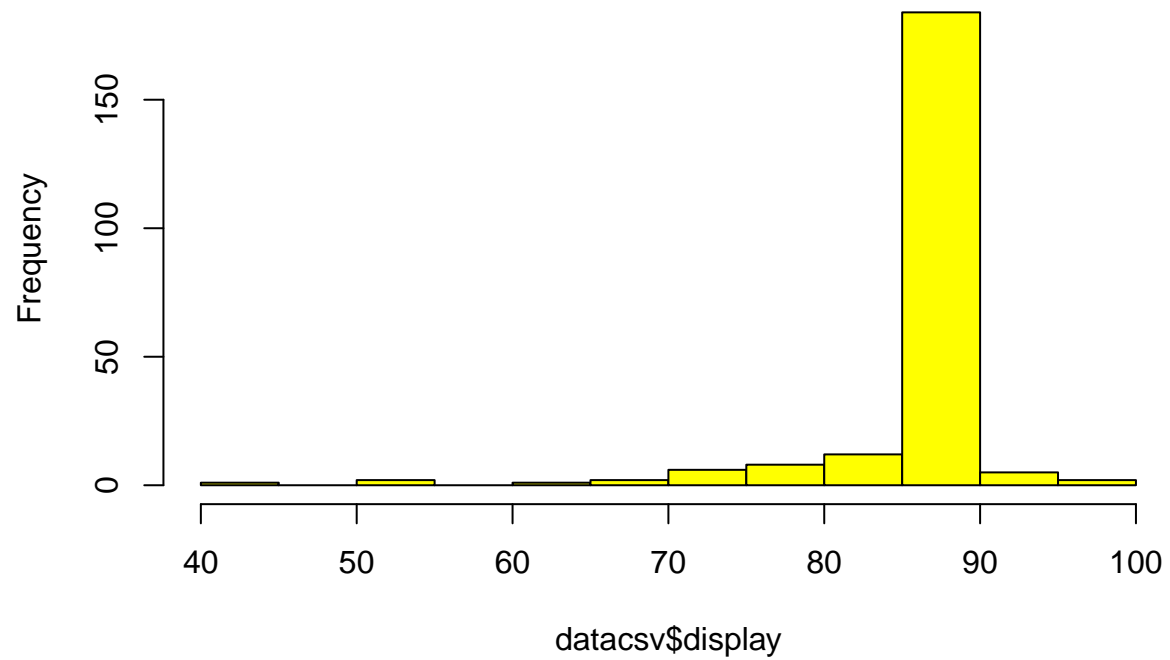
```
hist(datacsv$audio, main="Histogram variabel speaker HP", col = "blue")
```

Histogram variabel speaker HP



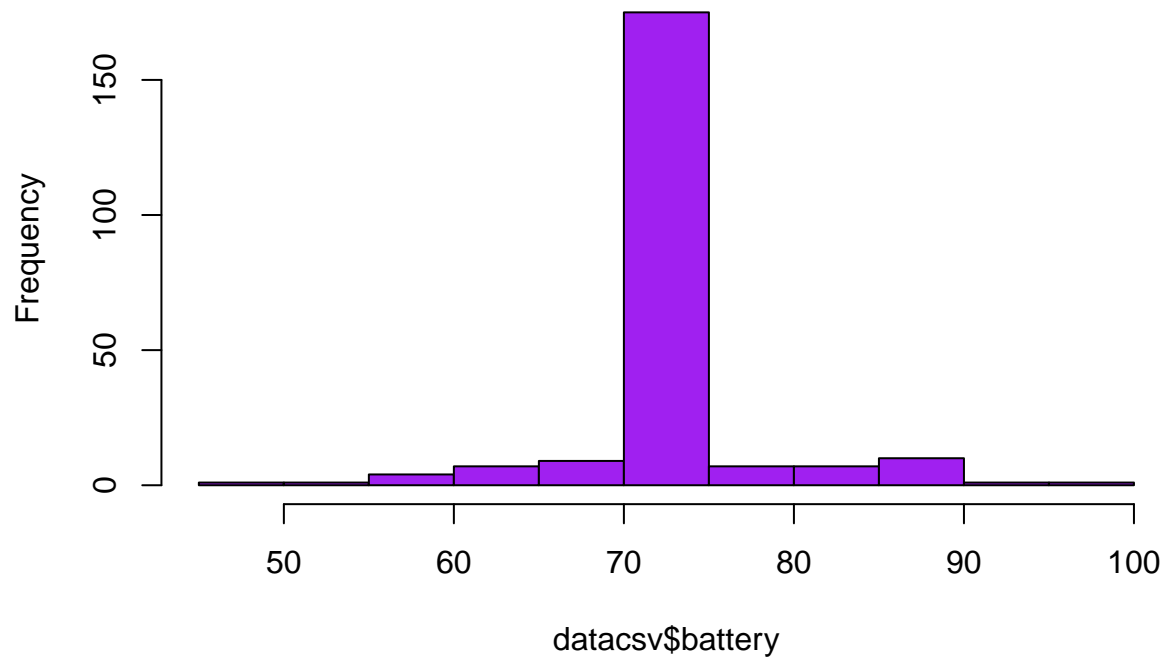
```
hist(datacsv$display, main="Histogram variabel layar HP", col = "yellow")
```

Histogram variabel layar HP



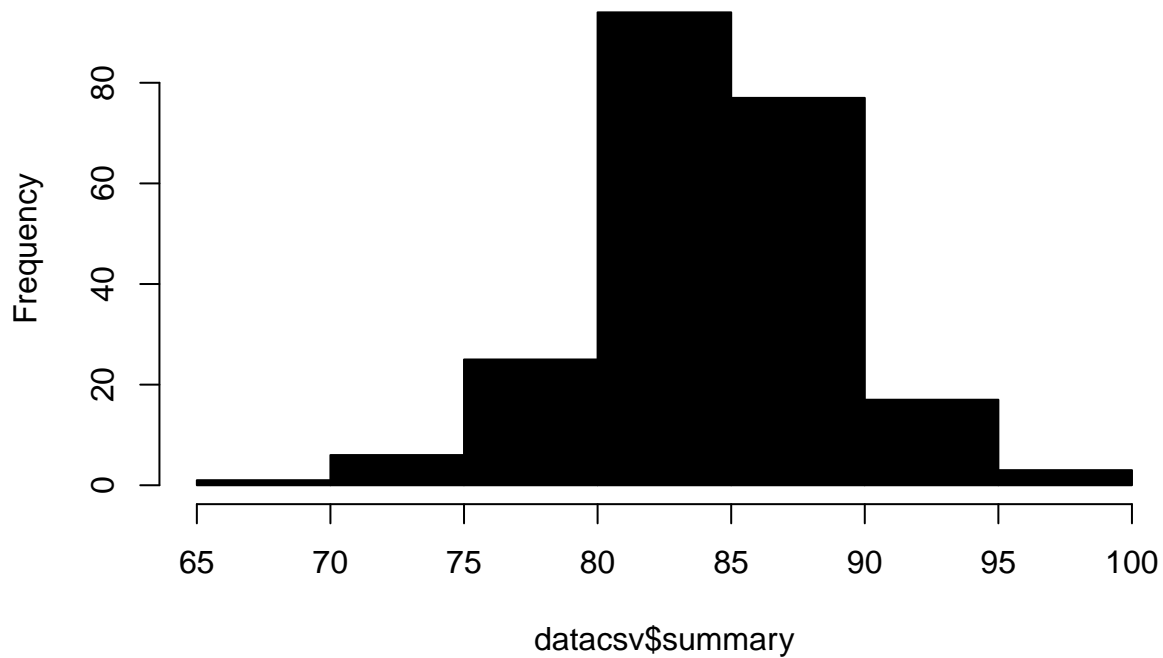
```
hist(datacsv$battery, main="Histogram variabel batere HP", col = "purple")
```

Histogram variabel batere HP



```
hist(datacsv$summary, main="Histogram variabel rata-rata rating HP", col = "black")
```

Histogram variabel rata-rata rating HP



Steam and leaf masing-masing variabel

```
stem(datacsv$camera)
```

```
##
## The decimal point is 1 digit(s) to the right of the |
##
## 5 | 6
## 6 |
## 6 | 67889
## 7 | 00133
## 7 | 69
## 8 | 0224444
## 8 | 555667777788899
## 9 | 000000012444
## 9 | 555677788999
## 10 | 000112222333334
## 10 | 5555555666778888888888888888888888888888888888899
## 11 | 0011111122222333444
## 11 | 555556666667777788888999
## 12 | 000000001111122233444
## 12 | 566888
## 13 | 0001112233
## 13 | 556779
```

```
stem(datacsv$selfie)
```

```
stem(datacsv$audio)
```

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```
stem(datacsv$display)
```

[illegible]

```
stem(datacsv$battery)
```

```
##  
## The decimal point is at the |  
##  
## 48 | 0  
## 50 |  
## 52 |  
## 54 | 0  
## 56 | 0  
## 58 | 00  
## 60 | 00  
## 62 | 0000  
## 64 | 00  
## 66 | 000  
## 68 | 000  
## 70 | 0000  
## 72 | 00  
## 74 | 00555555555555555555555555555555555555555555+92  
## 76 | 0000  
## 78 | 000  
## 80 | 000  
## 82 | 0  
## 84 | 000  
## 86 | 00000  
## 88 | 00000  
## 90 |  
## 92 |  
## 94 | 0  
## 96 | 0
```

```
stem(datacsv$summary)
```

##

```
## The decimal point is at the |
##
## 66 | 8
## 68 |
## 70 | 2
## 72 | 8
## 74 | 0056
## 76 | 6800244469
## 78 | 00666802245688
## 80 | 0222444466888900022444444444466788
## 82 | 022234566677888800022224446667889
## 84 | 0000011111222444444556770001112333444666778899
## 86 | 2244455555666667788888999002334445556667888
## 88 | 012244801123446
## 90 | 1356772235
## 92 | 23826
## 94 | 25
## 96 | 70
## 98 | 8
```

Normal QQ Plot

```
plot(datacsv$summary, col="blue", main="Normal QQ plot rata-rata rating HP")
```

