

Data Science Draft

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Importing the data

Column names: snoring - snoring range of the user (snoring rate) respiration - respiration rate bodytemp - body temperature limb - limb movement rate bloodO - blood oxygen levels eye - eye movement sleephrs - number of hours of sleep heart - heart rate stress - Stress Levels (0- low/normal, 1 - medium low, 2- medium, 3-medium high, 4 -high)

```
sleep_stress = read.csv(file = "SleepStress.csv", sep=",", header=TRUE, col.names = c("snoring", "respiration", "bodytemp", "limb", "bloodO", "eye", "sleephrs", "heart", "stress"))
```

sleep_stress

| ## | snoring | respiration | bodytemp | limb | bloodO | eye | sleephrs | heart | stress |
|-------|---------|-------------|----------|--------|--------|--------|----------|-------|--------|
| ## 1 | 93.800 | 25.680 | 91.840 | 16.600 | 89.840 | 99.60 | 1.840 | 74.20 | 3 |
| ## 2 | 91.640 | 25.104 | 91.552 | 15.880 | 89.552 | 98.88 | 1.552 | 72.76 | 3 |
| ## 3 | 60.000 | 20.000 | 96.000 | 10.000 | 95.000 | 85.00 | 7.000 | 60.00 | 1 |
| ## 4 | 85.760 | 23.536 | 90.768 | 13.920 | 88.768 | 96.92 | 0.768 | 68.84 | 3 |
| ## 5 | 48.120 | 17.248 | 97.872 | 6.496 | 96.248 | 72.48 | 8.248 | 53.12 | 0 |
| ## 6 | 56.880 | 19.376 | 95.376 | 9.376 | 94.064 | 83.44 | 6.376 | 58.44 | 1 |
| ## 7 | 47.000 | 16.800 | 97.200 | 5.600 | 95.800 | 68.00 | 7.800 | 52.00 | 0 |
| ## 8 | 50.000 | 18.000 | 99.000 | 8.000 | 97.000 | 80.00 | 9.000 | 55.00 | 0 |
| ## 9 | 45.280 | 16.112 | 96.168 | 4.224 | 95.112 | 61.12 | 7.112 | 50.28 | 0 |
| ## 10 | 55.520 | 19.104 | 95.104 | 9.104 | 93.656 | 82.76 | 6.104 | 57.76 | 1 |
| ## 11 | 73.440 | 21.344 | 93.344 | 11.344 | 91.344 | 91.72 | 4.016 | 63.36 | 2 |
| ## 12 | 59.280 | 19.856 | 95.856 | 9.856 | 94.784 | 84.64 | 6.856 | 59.64 | 1 |
| ## 13 | 48.600 | 17.440 | 98.160 | 6.880 | 96.440 | 74.40 | 8.440 | 53.60 | 0 |
| ## 14 | 96.288 | 26.288 | 85.360 | 17.144 | 82.432 | 100.36 | 0.000 | 75.72 | 4 |
| ## 15 | 87.800 | 24.080 | 91.040 | 14.600 | 89.040 | 97.60 | 1.040 | 70.20 | 3 |
| ## 16 | 52.320 | 18.464 | 94.464 | 8.464 | 92.696 | 81.16 | 5.464 | 56.16 | 1 |
| ## 17 | 52.640 | 18.528 | 94.528 | 8.528 | 92.792 | 81.32 | 5.528 | 56.32 | 1 |
| ## 18 | 86.240 | 23.664 | 90.832 | 14.080 | 88.832 | 97.08 | 0.832 | 69.16 | 3 |
| ## 19 | 81.560 | 22.416 | 90.208 | 12.520 | 88.208 | 95.52 | 0.208 | 66.04 | 3 |
| ## 20 | 63.680 | 20.368 | 92.368 | 10.368 | 90.368 | 86.84 | 2.552 | 60.92 | 2 |
| ## 21 | 77.600 | 21.760 | 93.760 | 11.760 | 91.760 | 93.80 | 4.640 | 64.40 | 2 |
| ## 22 | 77.280 | 21.728 | 93.728 | 11.728 | 91.728 | 93.64 | 4.592 | 64.32 | 2 |
| ## 23 | 69.760 | 20.976 | 92.976 | 10.976 | 90.976 | 89.88 | 3.464 | 62.44 | 2 |
| ## 24 | 88.040 | 24.144 | 91.072 | 14.680 | 89.072 | 97.68 | 1.072 | 70.36 | 3 |
| ## 25 | 89.960 | 24.656 | 91.328 | 15.320 | 89.328 | 98.32 | 1.328 | 71.64 | 3 |
| ## 26 | 53.680 | 18.736 | 94.736 | 8.736 | 93.104 | 81.84 | 5.736 | 56.84 | 1 |
| ## 27 | 78.560 | 21.856 | 93.856 | 11.856 | 91.856 | 94.28 | 4.784 | 64.64 | 2 |
| ## 28 | 50.960 | 18.192 | 94.192 | 8.192 | 92.288 | 80.48 | 5.192 | 55.48 | 1 |
| ## 29 | 94.760 | 25.936 | 91.968 | 16.920 | 89.968 | 99.92 | 1.968 | 74.84 | 3 |
| ## 30 | 62.080 | 20.208 | 92.208 | 10.208 | 90.208 | 86.04 | 2.312 | 60.52 | 2 |
| ## 31 | 49.120 | 17.648 | 98.472 | 7.296 | 96.648 | 76.48 | 8.648 | 54.12 | 0 |

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|-------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 32 | 96.256 | 26.256 | 85.320 | 17.128 | 82.384 | 100.32 | 0.000 | 75.64 | 4 |
| ## 33 | 47.680 | 17.072 | 97.608 | 6.144 | 96.072 | 70.72 | 8.072 | 52.68 | 0 |
| ## 34 | 99.904 | 29.904 | 89.880 | 18.952 | 87.856 | 104.88 | 0.000 | 84.76 | 4 |
| ## 35 | 60.000 | 20.000 | 92.000 | 10.000 | 90.000 | 85.00 | 2.000 | 60.00 | 2 |
| ## 36 | 86.720 | 23.792 | 90.896 | 14.240 | 88.896 | 97.24 | 0.896 | 69.48 | 3 |
| ## 37 | 48.480 | 17.392 | 98.088 | 6.784 | 96.392 | 73.92 | 8.392 | 53.48 | 0 |
| ## 38 | 98.528 | 28.528 | 88.160 | 18.264 | 85.792 | 103.16 | 0.000 | 81.32 | 4 |
| ## 39 | 46.120 | 16.448 | 96.672 | 4.896 | 95.448 | 64.48 | 7.448 | 51.12 | 0 |
| ## 40 | 98.720 | 28.720 | 88.400 | 18.360 | 86.080 | 103.40 | 0.000 | 81.80 | 4 |
| ## 41 | 60.960 | 20.096 | 92.096 | 10.096 | 90.096 | 85.48 | 2.144 | 60.24 | 2 |
| ## 42 | 65.600 | 20.560 | 92.560 | 10.560 | 90.560 | 87.80 | 2.840 | 61.40 | 2 |
| ## 43 | 75.360 | 21.536 | 93.536 | 11.536 | 91.536 | 92.68 | 4.304 | 63.84 | 2 |
| ## 44 | 49.280 | 17.712 | 98.568 | 7.424 | 96.712 | 77.12 | 8.712 | 54.28 | 0 |
| ## 45 | 73.280 | 21.328 | 93.328 | 11.328 | 91.328 | 91.64 | 3.992 | 63.32 | 2 |
| ## 46 | 98.912 | 28.912 | 88.640 | 18.456 | 86.368 | 103.64 | 0.000 | 82.28 | 4 |
| ## 47 | 62.880 | 20.288 | 92.288 | 10.288 | 90.288 | 86.44 | 2.432 | 60.72 | 2 |
| ## 48 | 97.664 | 27.664 | 87.080 | 17.832 | 84.496 | 102.08 | 0.000 | 79.16 | 4 |
| ## 49 | 56.720 | 19.344 | 95.344 | 9.344 | 94.016 | 83.36 | 6.344 | 58.36 | 1 |
| ## 50 | 96.576 | 26.576 | 85.720 | 17.288 | 82.864 | 100.72 | 0.000 | 76.44 | 4 |
| ## 51 | 49.600 | 17.840 | 98.760 | 7.680 | 96.840 | 78.40 | 8.840 | 54.60 | 0 |
| ## 52 | 53.600 | 18.720 | 94.720 | 8.720 | 93.080 | 81.80 | 5.720 | 56.80 | 1 |
| ## 53 | 93.200 | 25.520 | 91.760 | 16.400 | 89.760 | 99.40 | 1.760 | 73.80 | 3 |
| ## 54 | 46.840 | 16.736 | 97.104 | 5.472 | 95.736 | 67.36 | 7.736 | 51.84 | 0 |
| ## 55 | 56.080 | 19.216 | 95.216 | 9.216 | 93.824 | 83.04 | 6.216 | 58.04 | 1 |
| ## 56 | 75.680 | 21.568 | 93.568 | 11.568 | 91.568 | 92.84 | 4.352 | 63.92 | 2 |
| ## 57 | 97.536 | 27.536 | 86.920 | 17.768 | 84.304 | 101.92 | 0.000 | 78.84 | 4 |
| ## 58 | 92.840 | 25.424 | 91.712 | 16.280 | 89.712 | 99.28 | 1.712 | 73.56 | 3 |
| ## 59 | 87.560 | 24.016 | 91.008 | 14.520 | 89.008 | 97.52 | 1.008 | 70.04 | 3 |
| ## 60 | 58.480 | 19.696 | 95.696 | 9.696 | 94.544 | 84.24 | 6.696 | 59.24 | 1 |
| ## 61 | 98.336 | 28.336 | 87.920 | 18.168 | 85.504 | 102.92 | 0.000 | 80.84 | 4 |
| ## 62 | 81.080 | 22.288 | 90.144 | 12.360 | 88.144 | 95.36 | 0.144 | 65.72 | 3 |
| ## 63 | 46.600 | 16.640 | 96.960 | 5.280 | 95.640 | 66.40 | 7.640 | 51.60 | 0 |
| ## 64 | 61.600 | 20.160 | 92.160 | 10.160 | 90.160 | 85.80 | 2.240 | 60.40 | 2 |
| ## 65 | 96.448 | 26.448 | 85.560 | 17.224 | 82.672 | 100.56 | 0.000 | 76.12 | 4 |
| ## 66 | 50.240 | 18.048 | 94.048 | 8.048 | 92.072 | 80.12 | 5.048 | 55.12 | 1 |
| ## 67 | 49.920 | 17.968 | 98.952 | 7.936 | 96.968 | 79.68 | 8.968 | 54.92 | 0 |
| ## 68 | 60.480 | 20.048 | 92.048 | 10.048 | 90.048 | 85.24 | 2.072 | 60.12 | 2 |
| ## 69 | 99.136 | 29.136 | 88.920 | 18.568 | 86.704 | 103.92 | 0.000 | 82.84 | 4 |
| ## 70 | 48.280 | 17.312 | 97.968 | 6.624 | 96.312 | 73.12 | 8.312 | 53.28 | 0 |
| ## 71 | 50.480 | 18.096 | 94.096 | 8.096 | 92.144 | 80.24 | 5.096 | 55.24 | 1 |
| ## 72 | 96.192 | 26.192 | 85.240 | 17.096 | 82.288 | 100.24 | 0.000 | 75.48 | 4 |
| ## 73 | 57.680 | 19.536 | 95.536 | 9.536 | 94.304 | 83.84 | 6.536 | 58.84 | 1 |
| ## 74 | 45.160 | 16.064 | 96.096 | 4.128 | 95.064 | 60.64 | 7.064 | 50.16 | 0 |
| ## 75 | 48.680 | 17.472 | 98.208 | 6.944 | 96.472 | 74.72 | 8.472 | 53.68 | 0 |
| ## 76 | 98.016 | 28.016 | 87.520 | 18.008 | 85.024 | 102.52 | 0.000 | 80.04 | 4 |
| ## 77 | 96.800 | 26.800 | 86.000 | 17.400 | 83.200 | 101.00 | 0.000 | 77.00 | 4 |
| ## 78 | 56.480 | 19.296 | 95.296 | 9.296 | 93.944 | 83.24 | 6.296 | 58.24 | 1 |
| ## 79 | 90.080 | 24.688 | 91.344 | 15.360 | 89.344 | 98.36 | 1.344 | 71.72 | 3 |
| ## 80 | 96.000 | 26.000 | 85.000 | 17.000 | 82.000 | 100.00 | 0.000 | 75.00 | 4 |
| ## 81 | 50.640 | 18.128 | 94.128 | 8.128 | 92.192 | 80.32 | 5.128 | 55.32 | 1 |
| ## 82 | 50.560 | 18.112 | 94.112 | 8.112 | 92.168 | 80.28 | 5.112 | 55.28 | 1 |
| ## 83 | 53.920 | 18.784 | 94.784 | 8.784 | 93.176 | 81.96 | 5.784 | 56.96 | 1 |
| ## 84 | 96.672 | 26.672 | 85.840 | 17.336 | 83.008 | 100.84 | 0.000 | 76.68 | 4 |
| ## 85 | 68.320 | 20.832 | 92.832 | 10.832 | 90.832 | 89.16 | 3.248 | 62.08 | 2 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 86 | 54.880 | 18.976 | 94.976 | 8.976 | 93.464 | 82.44 | 5.976 | 57.44 | 1 |
| ## 87 | 52.400 | 18.480 | 94.480 | 8.480 | 92.720 | 81.20 | 5.480 | 56.20 | 1 |
| ## 88 | 51.600 | 18.320 | 94.320 | 8.320 | 92.480 | 80.80 | 5.320 | 55.80 | 1 |
| ## 89 | 92.480 | 25.328 | 91.664 | 16.160 | 89.664 | 99.16 | 1.664 | 73.32 | 3 |
| ## 90 | 98.240 | 28.240 | 87.800 | 18.120 | 85.360 | 102.80 | 0.000 | 80.60 | 4 |
| ## 91 | 65.120 | 20.512 | 92.512 | 10.512 | 90.512 | 87.56 | 2.768 | 61.28 | 2 |
| ## 92 | 86.600 | 23.760 | 90.880 | 14.200 | 88.880 | 97.20 | 0.880 | 69.40 | 3 |
| ## 93 | 68.000 | 20.800 | 92.800 | 10.800 | 90.800 | 89.00 | 3.200 | 62.00 | 2 |
| ## 94 | 99.808 | 29.808 | 89.760 | 18.904 | 87.712 | 104.76 | 0.000 | 84.52 | 4 |
| ## 95 | 45.200 | 16.080 | 96.120 | 4.160 | 95.080 | 60.80 | 7.080 | 50.20 | 0 |
| ## 96 | 63.200 | 20.320 | 92.320 | 10.320 | 90.320 | 86.60 | 2.480 | 60.80 | 2 |
| ## 97 | 98.272 | 28.272 | 87.840 | 18.136 | 85.408 | 102.84 | 0.000 | 80.68 | 4 |
| ## 98 | 75.200 | 21.520 | 93.520 | 11.520 | 91.520 | 92.60 | 4.280 | 63.80 | 2 |
| ## 99 | 76.960 | 21.696 | 93.696 | 11.696 | 91.696 | 93.48 | 4.544 | 64.24 | 2 |
| ## 100 | 80.000 | 22.000 | 90.000 | 12.000 | 88.000 | 95.00 | 0.000 | 65.00 | 3 |
| ## 101 | 99.616 | 29.616 | 89.520 | 18.808 | 87.424 | 104.52 | 0.000 | 84.04 | 4 |
| ## 102 | 97.216 | 27.216 | 86.520 | 17.608 | 83.824 | 101.52 | 0.000 | 78.04 | 4 |
| ## 103 | 45.040 | 16.016 | 96.024 | 4.032 | 95.016 | 60.16 | 7.016 | 50.04 | 0 |
| ## 104 | 97.376 | 27.376 | 86.720 | 17.688 | 84.064 | 101.72 | 0.000 | 78.44 | 4 |
| ## 105 | 53.520 | 18.704 | 94.704 | 8.704 | 93.056 | 81.76 | 5.704 | 56.76 | 1 |
| ## 106 | 61.440 | 20.144 | 92.144 | 10.144 | 90.144 | 85.72 | 2.216 | 60.36 | 2 |
| ## 107 | 62.240 | 20.224 | 92.224 | 10.224 | 90.224 | 86.12 | 2.336 | 60.56 | 2 |
| ## 108 | 79.200 | 21.920 | 93.920 | 11.920 | 91.920 | 94.60 | 4.880 | 64.80 | 2 |
| ## 109 | 96.960 | 26.960 | 86.200 | 17.480 | 83.440 | 101.20 | 0.000 | 77.40 | 4 |
| ## 110 | 54.400 | 18.880 | 94.880 | 8.880 | 93.320 | 82.20 | 5.880 | 57.20 | 1 |
| ## 111 | 68.960 | 20.896 | 92.896 | 10.896 | 90.896 | 89.48 | 3.344 | 62.24 | 2 |
| ## 112 | 96.608 | 26.608 | 85.760 | 17.304 | 82.912 | 100.76 | 0.000 | 76.52 | 4 |
| ## 113 | 47.440 | 16.976 | 97.464 | 5.952 | 95.976 | 69.76 | 7.976 | 52.44 | 0 |
| ## 114 | 90.560 | 24.816 | 91.408 | 15.520 | 89.408 | 98.52 | 1.408 | 72.04 | 3 |
| ## 115 | 66.880 | 20.688 | 92.688 | 10.688 | 90.688 | 88.44 | 3.032 | 61.72 | 2 |
| ## 116 | 97.920 | 27.920 | 87.400 | 17.960 | 84.880 | 102.40 | 0.000 | 79.80 | 4 |
| ## 117 | 68.640 | 20.864 | 92.864 | 10.864 | 90.864 | 89.32 | 3.296 | 62.16 | 2 |
| ## 118 | 76.000 | 21.600 | 93.600 | 11.600 | 91.600 | 93.00 | 4.400 | 64.00 | 2 |
| ## 119 | 49.520 | 17.808 | 98.712 | 7.616 | 96.808 | 78.08 | 8.808 | 54.52 | 0 |
| ## 120 | 54.960 | 18.992 | 94.992 | 8.992 | 93.488 | 82.48 | 5.992 | 57.48 | 1 |
| ## 121 | 55.280 | 19.056 | 95.056 | 9.056 | 93.584 | 82.64 | 6.056 | 57.64 | 1 |
| ## 122 | 90.320 | 24.752 | 91.376 | 15.440 | 89.376 | 98.44 | 1.376 | 71.88 | 3 |
| ## 123 | 97.312 | 27.312 | 86.640 | 17.656 | 83.968 | 101.64 | 0.000 | 78.28 | 4 |
| ## 124 | 58.080 | 19.616 | 95.616 | 9.616 | 94.424 | 84.04 | 6.616 | 59.04 | 1 |
| ## 125 | 83.600 | 22.960 | 90.480 | 13.200 | 88.480 | 96.20 | 0.480 | 67.40 | 3 |
| ## 126 | 98.112 | 28.112 | 87.640 | 18.056 | 85.168 | 102.64 | 0.000 | 80.28 | 4 |
| ## 127 | 98.208 | 28.208 | 87.760 | 18.104 | 85.312 | 102.76 | 0.000 | 80.52 | 4 |
| ## 128 | 65.760 | 20.576 | 92.576 | 10.576 | 90.576 | 87.88 | 2.864 | 61.44 | 2 |
| ## 129 | 57.200 | 19.440 | 95.440 | 9.440 | 94.160 | 83.60 | 6.440 | 58.60 | 1 |
| ## 130 | 97.568 | 27.568 | 86.960 | 17.784 | 84.352 | 101.96 | 0.000 | 78.92 | 4 |
| ## 131 | 68.800 | 20.880 | 92.880 | 10.880 | 90.880 | 89.40 | 3.320 | 62.20 | 2 |
| ## 132 | 47.800 | 17.120 | 97.680 | 6.240 | 96.120 | 71.20 | 8.120 | 52.80 | 0 |
| ## 133 | 97.184 | 27.184 | 86.480 | 17.592 | 83.776 | 101.48 | 0.000 | 77.96 | 4 |
| ## 134 | 92.720 | 25.392 | 91.696 | 16.240 | 89.696 | 99.24 | 1.696 | 73.48 | 3 |
| ## 135 | 59.680 | 19.936 | 95.936 | 9.936 | 94.904 | 84.84 | 6.936 | 59.84 | 1 |
| ## 136 | 48.560 | 17.424 | 98.136 | 6.848 | 96.424 | 74.24 | 8.424 | 53.56 | 0 |
| ## 137 | 48.360 | 17.344 | 98.016 | 6.688 | 96.344 | 73.44 | 8.344 | 53.36 | 0 |
| ## 138 | 78.080 | 21.808 | 93.808 | 11.808 | 91.808 | 94.04 | 4.712 | 64.52 | 2 |
| ## 139 | 96.736 | 26.736 | 85.920 | 17.368 | 83.104 | 100.92 | 0.000 | 76.84 | 4 |

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|--------|---------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 140 | 47.720 | 17.088 | 97.632 | 6.176 | 96.088 | 70.88 | 8.088 | 52.72 | 0 |
| ## 141 | 71.360 | 21.136 | 93.136 | 11.136 | 91.136 | 90.68 | 3.704 | 62.84 | 2 |
| ## 142 | 81.440 | 22.384 | 90.192 | 12.480 | 88.192 | 95.48 | 0.192 | 65.96 | 3 |
| ## 143 | 78.400 | 21.840 | 93.840 | 11.840 | 91.840 | 94.20 | 4.760 | 64.60 | 2 |
| ## 144 | 49.320 | 17.728 | 98.592 | 7.456 | 96.728 | 77.28 | 8.728 | 54.32 | 0 |
| ## 145 | 68.480 | 20.848 | 92.848 | 10.848 | 90.848 | 89.24 | 3.272 | 62.12 | 2 |
| ## 146 | 46.920 | 16.768 | 97.152 | 5.536 | 95.768 | 67.68 | 7.768 | 51.92 | 0 |
| ## 147 | 48.760 | 17.504 | 98.256 | 7.008 | 96.504 | 75.04 | 8.504 | 53.76 | 0 |
| ## 148 | 45.080 | 16.032 | 96.048 | 4.064 | 95.032 | 60.32 | 7.032 | 50.08 | 0 |
| ## 149 | 45.120 | 16.048 | 96.072 | 4.096 | 95.048 | 60.48 | 7.048 | 50.12 | 0 |
| ## 150 | 50.320 | 18.064 | 94.064 | 8.064 | 92.096 | 80.16 | 5.064 | 55.16 | 1 |
| ## 151 | 88.520 | 24.272 | 91.136 | 14.840 | 89.136 | 97.84 | 1.136 | 70.68 | 3 |
| ## 152 | 47.880 | 17.152 | 97.728 | 6.304 | 96.152 | 71.52 | 8.152 | 52.88 | 0 |
| ## 153 | 96.864 | 26.864 | 86.080 | 17.432 | 83.296 | 101.08 | 0.000 | 77.16 | 4 |
| ## 154 | 96.096 | 26.096 | 85.120 | 17.048 | 82.144 | 100.12 | 0.000 | 75.24 | 4 |
| ## 155 | 49.000 | 17.600 | 98.400 | 7.200 | 96.600 | 76.00 | 8.600 | 54.00 | 0 |
| ## 156 | 64.640 | 20.464 | 92.464 | 10.464 | 90.464 | 87.32 | 2.696 | 61.16 | 2 |
| ## 157 | 93.320 | 25.552 | 91.776 | 16.440 | 89.776 | 99.44 | 1.776 | 73.88 | 3 |
| ## 158 | 74.560 | 21.456 | 93.456 | 11.456 | 91.456 | 92.28 | 4.184 | 63.64 | 2 |
| ## 159 | 96.320 | 26.320 | 85.400 | 17.160 | 82.480 | 100.40 | 0.000 | 75.80 | 4 |
| ## 160 | 98.784 | 28.784 | 88.480 | 18.392 | 86.176 | 103.48 | 0.000 | 81.96 | 4 |
| ## 161 | 98.880 | 28.880 | 88.600 | 18.440 | 86.320 | 103.60 | 0.000 | 82.20 | 4 |
| ## 162 | 70.560 | 21.056 | 93.056 | 11.056 | 91.056 | 90.28 | 3.584 | 62.64 | 2 |
| ## 163 | 55.760 | 19.152 | 95.152 | 9.152 | 93.728 | 82.88 | 6.152 | 57.88 | 1 |
| ## 164 | 66.080 | 20.608 | 92.608 | 10.608 | 90.608 | 88.04 | 2.912 | 61.52 | 2 |
| ## 165 | 99.392 | 29.392 | 89.240 | 18.696 | 87.088 | 104.24 | 0.000 | 83.48 | 4 |
| ## 166 | 76.800 | 21.680 | 93.680 | 11.680 | 91.680 | 93.40 | 4.520 | 64.20 | 2 |
| ## 167 | 46.800 | 16.720 | 97.080 | 5.440 | 95.720 | 67.20 | 7.720 | 51.80 | 0 |
| ## 168 | 47.280 | 16.912 | 97.368 | 5.824 | 95.912 | 69.12 | 7.912 | 52.28 | 0 |
| ## 169 | 99.776 | 29.776 | 89.720 | 18.888 | 87.664 | 104.72 | 0.000 | 84.44 | 4 |
| ## 170 | 100.000 | 30.000 | 90.000 | 19.000 | 88.000 | 105.00 | 0.000 | 85.00 | 4 |
| ## 171 | 59.600 | 19.920 | 95.920 | 9.920 | 94.880 | 84.80 | 6.920 | 59.80 | 1 |
| ## 172 | 74.720 | 21.472 | 93.472 | 11.472 | 91.472 | 92.36 | 4.208 | 63.68 | 2 |
| ## 173 | 71.200 | 21.120 | 93.120 | 11.120 | 91.120 | 90.60 | 3.680 | 62.80 | 2 |
| ## 174 | 58.160 | 19.632 | 95.632 | 9.632 | 94.448 | 84.08 | 6.632 | 59.08 | 1 |
| ## 175 | 53.440 | 18.688 | 94.688 | 8.688 | 93.032 | 81.72 | 5.688 | 56.72 | 1 |
| ## 176 | 52.560 | 18.512 | 94.512 | 8.512 | 92.768 | 81.28 | 5.512 | 56.28 | 1 |
| ## 177 | 54.320 | 18.864 | 94.864 | 8.864 | 93.296 | 82.16 | 5.864 | 57.16 | 1 |
| ## 178 | 98.080 | 28.080 | 87.600 | 18.040 | 85.120 | 102.60 | 0.000 | 80.20 | 4 |
| ## 179 | 92.000 | 25.200 | 91.600 | 16.000 | 89.600 | 99.00 | 1.600 | 73.00 | 3 |
| ## 180 | 58.880 | 19.776 | 95.776 | 9.776 | 94.664 | 84.44 | 6.776 | 59.44 | 1 |
| ## 181 | 55.200 | 19.040 | 95.040 | 9.040 | 93.560 | 82.60 | 6.040 | 57.60 | 1 |
| ## 182 | 53.360 | 18.672 | 94.672 | 8.672 | 93.008 | 81.68 | 5.672 | 56.68 | 1 |
| ## 183 | 79.040 | 21.904 | 93.904 | 11.904 | 91.904 | 94.52 | 4.856 | 64.76 | 2 |
| ## 184 | 58.240 | 19.648 | 95.648 | 9.648 | 94.472 | 84.12 | 6.648 | 59.12 | 1 |
| ## 185 | 46.200 | 16.480 | 96.720 | 4.960 | 95.480 | 64.80 | 7.480 | 51.20 | 0 |
| ## 186 | 67.040 | 20.704 | 92.704 | 10.704 | 90.704 | 88.52 | 3.056 | 61.76 | 2 |
| ## 187 | 47.040 | 16.816 | 97.224 | 5.632 | 95.816 | 68.16 | 7.816 | 52.04 | 0 |
| ## 188 | 73.760 | 21.376 | 93.376 | 11.376 | 91.376 | 91.88 | 4.064 | 63.44 | 2 |
| ## 189 | 57.040 | 19.408 | 95.408 | 9.408 | 94.112 | 83.52 | 6.408 | 58.52 | 1 |
| ## 190 | 72.480 | 21.248 | 93.248 | 11.248 | 91.248 | 91.24 | 3.872 | 63.12 | 2 |
| ## 191 | 52.800 | 18.560 | 94.560 | 8.560 | 92.840 | 81.40 | 5.560 | 56.40 | 1 |
| ## 192 | 57.280 | 19.456 | 95.456 | 9.456 | 94.184 | 83.64 | 6.456 | 58.64 | 1 |
| ## 193 | 96.384 | 26.384 | 85.480 | 17.192 | 82.576 | 100.48 | 0.000 | 75.96 | 4 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 194 | 88.400 | 24.240 | 91.120 | 14.800 | 89.120 | 97.80 | 1.120 | 70.60 | 3 |
| ## 195 | 98.304 | 28.304 | 87.880 | 18.152 | 85.456 | 102.88 | 0.000 | 80.76 | 4 |
| ## 196 | 46.680 | 16.672 | 97.008 | 5.344 | 95.672 | 66.72 | 7.672 | 51.68 | 0 |
| ## 197 | 45.960 | 16.384 | 96.576 | 4.768 | 95.384 | 63.84 | 7.384 | 50.96 | 0 |
| ## 198 | 48.640 | 17.456 | 98.184 | 6.912 | 96.456 | 74.56 | 8.456 | 53.64 | 0 |
| ## 199 | 67.360 | 20.736 | 92.736 | 10.736 | 90.736 | 88.68 | 3.104 | 61.84 | 2 |
| ## 200 | 88.760 | 24.336 | 91.168 | 14.920 | 89.168 | 97.92 | 1.168 | 70.84 | 3 |
| ## 201 | 46.360 | 16.544 | 96.816 | 5.088 | 95.544 | 65.44 | 7.544 | 51.36 | 0 |
| ## 202 | 45.440 | 16.176 | 96.264 | 4.352 | 95.176 | 61.76 | 7.176 | 50.44 | 0 |
| ## 203 | 48.840 | 17.536 | 98.304 | 7.072 | 96.536 | 75.36 | 8.536 | 53.84 | 0 |
| ## 204 | 80.000 | 22.000 | 94.000 | 12.000 | 92.000 | 95.00 | 5.000 | 65.00 | 2 |
| ## 205 | 96.640 | 26.640 | 85.800 | 17.320 | 82.960 | 100.80 | 0.000 | 76.60 | 4 |
| ## 206 | 45.320 | 16.128 | 96.192 | 4.256 | 95.128 | 61.28 | 7.128 | 50.32 | 0 |
| ## 207 | 67.680 | 20.768 | 92.768 | 10.768 | 90.768 | 88.84 | 3.152 | 61.92 | 2 |
| ## 208 | 99.552 | 29.552 | 89.440 | 18.776 | 87.328 | 104.44 | 0.000 | 83.88 | 4 |
| ## 209 | 58.320 | 19.664 | 95.664 | 9.664 | 94.496 | 84.16 | 6.664 | 59.16 | 1 |
| ## 210 | 52.080 | 18.416 | 94.416 | 8.416 | 92.624 | 81.04 | 5.416 | 56.04 | 1 |
| ## 211 | 56.560 | 19.312 | 95.312 | 9.312 | 93.968 | 83.28 | 6.312 | 58.28 | 1 |
| ## 212 | 82.280 | 22.608 | 90.304 | 12.760 | 88.304 | 95.76 | 0.304 | 66.52 | 3 |
| ## 213 | 45.480 | 16.192 | 96.288 | 4.384 | 95.192 | 61.92 | 7.192 | 50.48 | 0 |
| ## 214 | 48.720 | 17.488 | 98.232 | 6.976 | 96.488 | 74.88 | 8.488 | 53.72 | 0 |
| ## 215 | 93.080 | 25.488 | 91.744 | 16.360 | 89.744 | 99.36 | 1.744 | 73.72 | 3 |
| ## 216 | 87.440 | 23.984 | 90.992 | 14.480 | 88.992 | 97.48 | 0.992 | 69.96 | 3 |
| ## 217 | 47.400 | 16.960 | 97.440 | 5.920 | 95.960 | 69.60 | 7.960 | 52.40 | 0 |
| ## 218 | 77.760 | 21.776 | 93.776 | 11.776 | 91.776 | 93.88 | 4.664 | 64.44 | 2 |
| ## 219 | 65.280 | 20.528 | 92.528 | 10.528 | 90.528 | 87.64 | 2.792 | 61.32 | 2 |
| ## 220 | 61.760 | 20.176 | 92.176 | 10.176 | 90.176 | 85.88 | 2.264 | 60.44 | 2 |
| ## 221 | 59.360 | 19.872 | 95.872 | 9.872 | 94.808 | 84.68 | 6.872 | 59.68 | 1 |
| ## 222 | 97.088 | 27.088 | 86.360 | 17.544 | 83.632 | 101.36 | 0.000 | 77.72 | 4 |
| ## 223 | 47.200 | 16.880 | 97.320 | 5.760 | 95.880 | 68.80 | 7.880 | 52.20 | 0 |
| ## 224 | 55.680 | 19.136 | 95.136 | 9.136 | 93.704 | 82.84 | 6.136 | 57.84 | 1 |
| ## 225 | 80.120 | 22.032 | 90.016 | 12.040 | 88.016 | 95.04 | 0.016 | 65.08 | 3 |
| ## 226 | 96.768 | 26.768 | 85.960 | 17.384 | 83.152 | 100.96 | 0.000 | 76.92 | 4 |
| ## 227 | 61.120 | 20.112 | 92.112 | 10.112 | 90.112 | 85.56 | 2.168 | 60.28 | 2 |
| ## 228 | 50.000 | 18.000 | 94.000 | 8.000 | 92.000 | 80.00 | 5.000 | 55.00 | 1 |
| ## 229 | 97.408 | 27.408 | 86.760 | 17.704 | 84.112 | 101.76 | 0.000 | 78.52 | 4 |
| ## 230 | 45.520 | 16.208 | 96.312 | 4.416 | 95.208 | 62.08 | 7.208 | 50.52 | 0 |
| ## 231 | 91.400 | 25.040 | 91.520 | 15.800 | 89.520 | 98.80 | 1.520 | 72.60 | 3 |
| ## 232 | 97.056 | 27.056 | 86.320 | 17.528 | 83.584 | 101.32 | 0.000 | 77.64 | 4 |
| ## 233 | 57.440 | 19.488 | 95.488 | 9.488 | 94.232 | 83.72 | 6.488 | 58.72 | 1 |
| ## 234 | 90.440 | 24.784 | 91.392 | 15.480 | 89.392 | 98.48 | 1.392 | 71.96 | 3 |
| ## 235 | 46.760 | 16.704 | 97.056 | 5.408 | 95.704 | 67.04 | 7.704 | 51.76 | 0 |
| ## 236 | 45.840 | 16.336 | 96.504 | 4.672 | 95.336 | 63.36 | 7.336 | 50.84 | 0 |
| ## 237 | 88.640 | 24.304 | 91.152 | 14.880 | 89.152 | 97.88 | 1.152 | 70.76 | 3 |
| ## 238 | 98.048 | 28.048 | 87.560 | 18.024 | 85.072 | 102.56 | 0.000 | 80.12 | 4 |
| ## 239 | 83.120 | 22.832 | 90.416 | 13.040 | 88.416 | 96.04 | 0.416 | 67.08 | 3 |
| ## 240 | 56.640 | 19.328 | 95.328 | 9.328 | 93.992 | 83.32 | 6.328 | 58.32 | 1 |
| ## 241 | 98.176 | 28.176 | 87.720 | 18.088 | 85.264 | 102.72 | 0.000 | 80.44 | 4 |
| ## 242 | 93.440 | 25.584 | 91.792 | 16.480 | 89.792 | 99.48 | 1.792 | 73.96 | 3 |
| ## 243 | 84.440 | 23.184 | 90.592 | 13.480 | 88.592 | 96.48 | 0.592 | 67.96 | 3 |
| ## 244 | 98.432 | 28.432 | 88.040 | 18.216 | 85.648 | 103.04 | 0.000 | 81.08 | 4 |
| ## 245 | 80.960 | 22.256 | 90.128 | 12.320 | 88.128 | 95.32 | 0.128 | 65.64 | 3 |
| ## 246 | 49.080 | 17.632 | 98.448 | 7.264 | 96.632 | 76.32 | 8.632 | 54.08 | 0 |
| ## 247 | 86.960 | 23.856 | 90.928 | 14.320 | 88.928 | 97.32 | 0.928 | 69.64 | 3 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 248 | 79.360 | 21.936 | 93.936 | 11.936 | 91.936 | 94.68 | 4.904 | 64.84 | 2 |
| ## 249 | 81.200 | 22.320 | 90.160 | 12.400 | 88.160 | 95.40 | 0.160 | 65.80 | 3 |
| ## 250 | 83.960 | 23.056 | 90.528 | 13.320 | 88.528 | 96.32 | 0.528 | 67.64 | 3 |
| ## 251 | 51.360 | 18.272 | 94.272 | 8.272 | 92.408 | 80.68 | 5.272 | 55.68 | 1 |
| ## 252 | 97.248 | 27.248 | 86.560 | 17.624 | 83.872 | 101.56 | 0.000 | 78.12 | 4 |
| ## 253 | 60.160 | 20.016 | 92.016 | 10.016 | 90.016 | 85.08 | 2.024 | 60.04 | 2 |
| ## 254 | 82.760 | 22.736 | 90.368 | 12.920 | 88.368 | 95.92 | 0.368 | 66.84 | 3 |
| ## 255 | 51.120 | 18.224 | 94.224 | 8.224 | 92.336 | 80.56 | 5.224 | 55.56 | 1 |
| ## 256 | 92.960 | 25.456 | 91.728 | 16.320 | 89.728 | 99.32 | 1.728 | 73.64 | 3 |
| ## 257 | 74.880 | 21.488 | 93.488 | 11.488 | 91.488 | 92.44 | 4.232 | 63.72 | 2 |
| ## 258 | 83.480 | 22.928 | 90.464 | 13.160 | 88.464 | 96.16 | 0.464 | 67.32 | 3 |
| ## 259 | 97.632 | 27.632 | 87.040 | 17.816 | 84.448 | 102.04 | 0.000 | 79.08 | 4 |
| ## 260 | 69.440 | 20.944 | 92.944 | 10.944 | 90.944 | 89.72 | 3.416 | 62.36 | 2 |
| ## 261 | 99.872 | 29.872 | 89.840 | 18.936 | 87.808 | 104.84 | 0.000 | 84.68 | 4 |
| ## 262 | 81.920 | 22.512 | 90.256 | 12.640 | 88.256 | 95.64 | 0.256 | 66.28 | 3 |
| ## 263 | 73.120 | 21.312 | 93.312 | 11.312 | 91.312 | 91.56 | 3.968 | 63.28 | 2 |
| ## 264 | 48.880 | 17.552 | 98.328 | 7.104 | 96.552 | 75.52 | 8.552 | 53.88 | 0 |
| ## 265 | 47.120 | 16.848 | 97.272 | 5.696 | 95.848 | 68.48 | 7.848 | 52.12 | 0 |
| ## 266 | 56.160 | 19.232 | 95.232 | 9.232 | 93.848 | 83.08 | 6.232 | 58.08 | 1 |
| ## 267 | 77.440 | 21.744 | 93.744 | 11.744 | 91.744 | 93.72 | 4.616 | 64.36 | 2 |
| ## 268 | 84.800 | 23.280 | 90.640 | 13.600 | 88.640 | 96.60 | 0.640 | 68.20 | 3 |
| ## 269 | 74.400 | 21.440 | 93.440 | 11.440 | 91.440 | 92.20 | 4.160 | 63.60 | 2 |
| ## 270 | 77.920 | 21.792 | 93.792 | 11.792 | 91.792 | 93.96 | 4.688 | 64.48 | 2 |
| ## 271 | 98.848 | 28.848 | 88.560 | 18.424 | 86.272 | 103.56 | 0.000 | 82.12 | 4 |
| ## 272 | 99.040 | 29.040 | 88.800 | 18.520 | 86.560 | 103.80 | 0.000 | 82.60 | 4 |
| ## 273 | 58.560 | 19.712 | 95.712 | 9.712 | 94.568 | 84.28 | 6.712 | 59.28 | 1 |
| ## 274 | 46.640 | 16.656 | 96.984 | 5.312 | 95.656 | 66.56 | 7.656 | 51.64 | 0 |
| ## 275 | 98.656 | 28.656 | 88.320 | 18.328 | 85.984 | 103.32 | 0.000 | 81.64 | 4 |
| ## 276 | 51.920 | 18.384 | 94.384 | 8.384 | 92.576 | 80.96 | 5.384 | 55.96 | 1 |
| ## 277 | 70.080 | 21.008 | 93.008 | 11.008 | 91.008 | 90.04 | 3.512 | 62.52 | 2 |
| ## 278 | 89.480 | 24.528 | 91.264 | 15.160 | 89.264 | 98.16 | 1.264 | 71.32 | 3 |
| ## 279 | 96.928 | 26.928 | 86.160 | 17.464 | 83.392 | 101.16 | 0.000 | 77.32 | 4 |
| ## 280 | 89.360 | 24.496 | 91.248 | 15.120 | 89.248 | 98.12 | 1.248 | 71.24 | 3 |
| ## 281 | 94.280 | 25.808 | 91.904 | 16.760 | 89.904 | 99.76 | 1.904 | 74.52 | 3 |
| ## 282 | 83.360 | 22.896 | 90.448 | 13.120 | 88.448 | 96.12 | 0.448 | 67.24 | 3 |
| ## 283 | 45.360 | 16.144 | 96.216 | 4.288 | 95.144 | 61.44 | 7.144 | 50.36 | 0 |
| ## 284 | 94.880 | 25.968 | 91.984 | 16.960 | 89.984 | 99.96 | 1.984 | 74.92 | 3 |
| ## 285 | 47.240 | 16.896 | 97.344 | 5.792 | 95.896 | 68.96 | 7.896 | 52.24 | 0 |
| ## 286 | 54.560 | 18.912 | 94.912 | 8.912 | 93.368 | 82.28 | 5.912 | 57.28 | 1 |
| ## 287 | 89.840 | 24.624 | 91.312 | 15.280 | 89.312 | 98.28 | 1.312 | 71.56 | 3 |
| ## 288 | 89.000 | 24.400 | 91.200 | 15.000 | 89.200 | 98.00 | 1.200 | 71.00 | 3 |
| ## 289 | 88.280 | 24.208 | 91.104 | 14.760 | 89.104 | 97.76 | 1.104 | 70.52 | 3 |
| ## 290 | 64.320 | 20.432 | 92.432 | 10.432 | 90.432 | 87.16 | 2.648 | 61.08 | 2 |
| ## 291 | 96.480 | 26.480 | 85.600 | 17.240 | 82.720 | 100.60 | 0.000 | 76.20 | 4 |
| ## 292 | 48.240 | 17.296 | 97.944 | 6.592 | 96.296 | 72.96 | 8.296 | 53.24 | 0 |
| ## 293 | 97.344 | 27.344 | 86.680 | 17.672 | 84.016 | 101.68 | 0.000 | 78.36 | 4 |
| ## 294 | 45.880 | 16.352 | 96.528 | 4.704 | 95.352 | 63.52 | 7.352 | 50.88 | 0 |
| ## 295 | 98.368 | 28.368 | 87.960 | 18.184 | 85.552 | 102.96 | 0.000 | 80.92 | 4 |
| ## 296 | 49.680 | 17.872 | 98.808 | 7.744 | 96.872 | 78.72 | 8.872 | 54.68 | 0 |
| ## 297 | 69.120 | 20.912 | 92.912 | 10.912 | 90.912 | 89.56 | 3.368 | 62.28 | 2 |
| ## 298 | 59.520 | 19.904 | 95.904 | 9.904 | 94.856 | 84.76 | 6.904 | 59.76 | 1 |
| ## 299 | 76.480 | 21.648 | 93.648 | 11.648 | 91.648 | 93.24 | 4.472 | 64.12 | 2 |
| ## 300 | 53.120 | 18.624 | 94.624 | 8.624 | 92.936 | 81.56 | 5.624 | 56.56 | 1 |
| ## 301 | 86.360 | 23.696 | 90.848 | 14.120 | 88.848 | 97.12 | 0.848 | 69.24 | 3 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 302 | 49.360 | 17.744 | 98.616 | 7.488 | 96.744 | 77.44 | 8.744 | 54.36 | 0 |
| ## 303 | 46.000 | 16.400 | 96.600 | 4.800 | 95.400 | 64.00 | 7.400 | 51.00 | 0 |
| ## 304 | 91.760 | 25.136 | 91.568 | 15.920 | 89.568 | 98.92 | 1.568 | 72.84 | 3 |
| ## 305 | 65.920 | 20.592 | 92.592 | 10.592 | 90.592 | 87.96 | 2.888 | 61.48 | 2 |
| ## 306 | 62.560 | 20.256 | 92.256 | 10.256 | 90.256 | 86.28 | 2.384 | 60.64 | 2 |
| ## 307 | 96.704 | 26.704 | 85.880 | 17.352 | 83.056 | 100.88 | 0.000 | 76.76 | 4 |
| ## 308 | 72.320 | 21.232 | 93.232 | 11.232 | 91.232 | 91.16 | 3.848 | 63.08 | 2 |
| ## 309 | 90.920 | 24.912 | 91.456 | 15.640 | 89.456 | 98.64 | 1.456 | 72.28 | 3 |
| ## 310 | 48.800 | 17.520 | 98.280 | 7.040 | 96.520 | 75.20 | 8.520 | 53.80 | 0 |
| ## 311 | 85.040 | 23.344 | 90.672 | 13.680 | 88.672 | 96.68 | 0.672 | 68.36 | 3 |
| ## 312 | 71.040 | 21.104 | 93.104 | 11.104 | 91.104 | 90.52 | 3.656 | 62.76 | 2 |
| ## 313 | 55.920 | 19.184 | 95.184 | 9.184 | 93.776 | 82.96 | 6.184 | 57.96 | 1 |
| ## 314 | 45.560 | 16.224 | 96.336 | 4.448 | 95.224 | 62.24 | 7.224 | 50.56 | 0 |
| ## 315 | 56.800 | 19.360 | 95.360 | 9.360 | 94.040 | 83.40 | 6.360 | 58.40 | 1 |
| ## 316 | 49.800 | 17.920 | 98.880 | 7.840 | 96.920 | 79.20 | 8.920 | 54.80 | 0 |
| ## 317 | 95.000 | 26.000 | 92.000 | 17.000 | 90.000 | 100.00 | 2.000 | 75.00 | 3 |
| ## 318 | 87.200 | 23.920 | 90.960 | 14.400 | 88.960 | 97.40 | 0.960 | 69.80 | 3 |
| ## 319 | 82.520 | 22.672 | 90.336 | 12.840 | 88.336 | 95.84 | 0.336 | 66.68 | 3 |
| ## 320 | 48.000 | 17.200 | 97.800 | 6.400 | 96.200 | 72.00 | 8.200 | 53.00 | 0 |
| ## 321 | 91.160 | 24.976 | 91.488 | 15.720 | 89.488 | 98.72 | 1.488 | 72.44 | 3 |
| ## 322 | 96.032 | 26.032 | 85.040 | 17.016 | 82.048 | 100.04 | 0.000 | 75.08 | 4 |
| ## 323 | 71.520 | 21.152 | 93.152 | 11.152 | 91.152 | 90.76 | 3.728 | 62.88 | 2 |
| ## 324 | 96.064 | 26.064 | 85.080 | 17.032 | 82.096 | 100.08 | 0.000 | 75.16 | 4 |
| ## 325 | 89.600 | 24.560 | 91.280 | 15.200 | 89.280 | 98.20 | 1.280 | 71.40 | 3 |
| ## 326 | 99.680 | 29.680 | 89.600 | 18.840 | 87.520 | 104.60 | 0.000 | 84.20 | 4 |
| ## 327 | 57.600 | 19.520 | 95.520 | 9.520 | 94.280 | 83.80 | 6.520 | 58.80 | 1 |
| ## 328 | 70.720 | 21.072 | 93.072 | 11.072 | 91.072 | 90.36 | 3.608 | 62.68 | 2 |
| ## 329 | 49.400 | 17.760 | 98.640 | 7.520 | 96.760 | 77.60 | 8.760 | 54.40 | 0 |
| ## 330 | 74.080 | 21.408 | 93.408 | 11.408 | 91.408 | 92.04 | 4.112 | 63.52 | 2 |
| ## 331 | 96.992 | 26.992 | 86.240 | 17.496 | 83.488 | 101.24 | 0.000 | 77.48 | 4 |
| ## 332 | 49.200 | 17.680 | 98.520 | 7.360 | 96.680 | 76.80 | 8.680 | 54.20 | 0 |
| ## 333 | 51.040 | 18.208 | 94.208 | 8.208 | 92.312 | 80.52 | 5.208 | 55.52 | 1 |
| ## 334 | 84.680 | 23.248 | 90.624 | 13.560 | 88.624 | 96.56 | 0.624 | 68.12 | 3 |
| ## 335 | 98.464 | 28.464 | 88.080 | 18.232 | 85.696 | 103.08 | 0.000 | 81.16 | 4 |
| ## 336 | 46.240 | 16.496 | 96.744 | 4.992 | 95.496 | 64.96 | 7.496 | 51.24 | 0 |
| ## 337 | 50.720 | 18.144 | 94.144 | 8.144 | 92.216 | 80.36 | 5.144 | 55.36 | 1 |
| ## 338 | 47.520 | 17.008 | 97.512 | 6.016 | 96.008 | 70.08 | 8.008 | 52.52 | 0 |
| ## 339 | 47.080 | 16.832 | 97.248 | 5.664 | 95.832 | 68.32 | 7.832 | 52.08 | 0 |
| ## 340 | 89.120 | 24.432 | 91.216 | 15.040 | 89.216 | 98.04 | 1.216 | 71.08 | 3 |
| ## 341 | 45.600 | 16.240 | 96.360 | 4.480 | 95.240 | 62.40 | 7.240 | 50.60 | 0 |
| ## 342 | 45.680 | 16.272 | 96.408 | 4.544 | 95.272 | 62.72 | 7.272 | 50.68 | 0 |
| ## 343 | 64.160 | 20.416 | 92.416 | 10.416 | 90.416 | 87.08 | 2.624 | 61.04 | 2 |
| ## 344 | 92.120 | 25.232 | 91.616 | 16.040 | 89.616 | 99.04 | 1.616 | 73.08 | 3 |
| ## 345 | 72.640 | 21.264 | 93.264 | 11.264 | 91.264 | 91.32 | 3.896 | 63.16 | 2 |
| ## 346 | 97.280 | 27.280 | 86.600 | 17.640 | 83.920 | 101.60 | 0.000 | 78.20 | 4 |
| ## 347 | 49.560 | 17.824 | 98.736 | 7.648 | 96.824 | 78.24 | 8.824 | 54.56 | 0 |
| ## 348 | 59.440 | 19.888 | 95.888 | 9.888 | 94.832 | 84.72 | 6.888 | 59.72 | 1 |
| ## 349 | 92.360 | 25.296 | 91.648 | 16.120 | 89.648 | 99.12 | 1.648 | 73.24 | 3 |
| ## 350 | 97.440 | 27.440 | 86.800 | 17.720 | 84.160 | 101.80 | 0.000 | 78.60 | 4 |
| ## 351 | 80.720 | 22.192 | 90.096 | 12.240 | 88.096 | 95.24 | 0.096 | 65.48 | 3 |
| ## 352 | 99.936 | 29.936 | 89.920 | 18.968 | 87.904 | 104.92 | 0.000 | 84.84 | 4 |
| ## 353 | 99.168 | 29.168 | 88.960 | 18.584 | 86.752 | 103.96 | 0.000 | 82.92 | 4 |
| ## 354 | 85.160 | 23.376 | 90.688 | 13.720 | 88.688 | 96.72 | 0.688 | 68.44 | 3 |
| ## 355 | 97.696 | 27.696 | 87.120 | 17.848 | 84.544 | 102.12 | 0.000 | 79.24 | 4 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 356 | 75.840 | 21.584 | 93.584 | 11.584 | 91.584 | 92.92 | 4.376 | 63.96 | 2 |
| ## 357 | 45.000 | 16.000 | 96.000 | 4.000 | 95.000 | 60.00 | 7.000 | 50.00 | 0 |
| ## 358 | 98.496 | 28.496 | 88.120 | 18.248 | 85.744 | 103.12 | 0.000 | 81.24 | 4 |
| ## 359 | 64.000 | 20.400 | 92.400 | 10.400 | 90.400 | 87.00 | 2.600 | 61.00 | 2 |
| ## 360 | 81.320 | 22.352 | 90.176 | 12.440 | 88.176 | 95.44 | 0.176 | 65.88 | 3 |
| ## 361 | 75.520 | 21.552 | 93.552 | 11.552 | 91.552 | 92.76 | 4.328 | 63.88 | 2 |
| ## 362 | 52.000 | 18.400 | 94.400 | 8.400 | 92.600 | 81.00 | 5.400 | 56.00 | 1 |
| ## 363 | 66.400 | 20.640 | 92.640 | 10.640 | 90.640 | 88.20 | 2.960 | 61.60 | 2 |
| ## 364 | 71.840 | 21.184 | 93.184 | 11.184 | 91.184 | 90.92 | 3.776 | 62.96 | 2 |
| ## 365 | 99.072 | 29.072 | 88.840 | 18.536 | 86.608 | 103.84 | 0.000 | 82.68 | 4 |
| ## 366 | 49.240 | 17.696 | 98.544 | 7.392 | 96.696 | 76.96 | 8.696 | 54.24 | 0 |
| ## 367 | 86.480 | 23.728 | 90.864 | 14.160 | 88.864 | 97.16 | 0.864 | 69.32 | 3 |
| ## 368 | 46.040 | 16.416 | 96.624 | 4.832 | 95.416 | 64.16 | 7.416 | 51.04 | 0 |
| ## 369 | 58.960 | 19.792 | 95.792 | 9.792 | 94.688 | 84.48 | 6.792 | 59.48 | 1 |
| ## 370 | 92.240 | 25.264 | 91.632 | 16.080 | 89.632 | 99.08 | 1.632 | 73.16 | 3 |
| ## 371 | 97.472 | 27.472 | 86.840 | 17.736 | 84.208 | 101.84 | 0.000 | 78.68 | 4 |
| ## 372 | 93.920 | 25.712 | 91.856 | 16.640 | 89.856 | 99.64 | 1.856 | 74.28 | 3 |
| ## 373 | 67.840 | 20.784 | 92.784 | 10.784 | 90.784 | 88.92 | 3.176 | 61.96 | 2 |
| ## 374 | 46.280 | 16.512 | 96.768 | 5.024 | 95.512 | 65.12 | 7.512 | 51.28 | 0 |
| ## 375 | 90.200 | 24.720 | 91.360 | 15.400 | 89.360 | 98.40 | 1.360 | 71.80 | 3 |
| ## 376 | 50.400 | 18.080 | 94.080 | 8.080 | 92.120 | 80.20 | 5.080 | 55.20 | 1 |
| ## 377 | 70.880 | 21.088 | 93.088 | 11.088 | 91.088 | 90.44 | 3.632 | 62.72 | 2 |
| ## 378 | 97.792 | 27.792 | 87.240 | 17.896 | 84.688 | 102.24 | 0.000 | 79.48 | 4 |
| ## 379 | 47.960 | 17.184 | 97.776 | 6.368 | 96.184 | 71.84 | 8.184 | 52.96 | 0 |
| ## 380 | 56.240 | 19.248 | 95.248 | 9.248 | 93.872 | 83.12 | 6.248 | 58.12 | 1 |
| ## 381 | 96.160 | 26.160 | 85.200 | 17.080 | 82.240 | 100.20 | 0.000 | 75.40 | 4 |
| ## 382 | 55.120 | 19.024 | 95.024 | 9.024 | 93.536 | 82.56 | 6.024 | 57.56 | 1 |
| ## 383 | 61.920 | 20.192 | 92.192 | 10.192 | 90.192 | 85.96 | 2.288 | 60.48 | 2 |
| ## 384 | 48.080 | 17.232 | 97.848 | 6.464 | 96.232 | 72.32 | 8.232 | 53.08 | 0 |
| ## 385 | 84.320 | 23.152 | 90.576 | 13.440 | 88.576 | 96.44 | 0.576 | 67.88 | 3 |
| ## 386 | 47.320 | 16.928 | 97.392 | 5.856 | 95.928 | 69.28 | 7.928 | 52.32 | 0 |
| ## 387 | 53.040 | 18.608 | 94.608 | 8.608 | 92.912 | 81.52 | 5.608 | 56.52 | 1 |
| ## 388 | 57.120 | 19.424 | 95.424 | 9.424 | 94.136 | 83.56 | 6.424 | 58.56 | 1 |
| ## 389 | 84.920 | 23.312 | 90.656 | 13.640 | 88.656 | 96.64 | 0.656 | 68.28 | 3 |
| ## 390 | 55.040 | 19.008 | 95.008 | 9.008 | 93.512 | 82.52 | 6.008 | 57.52 | 1 |
| ## 391 | 99.968 | 29.968 | 89.960 | 18.984 | 87.952 | 104.96 | 0.000 | 84.92 | 4 |
| ## 392 | 57.920 | 19.584 | 95.584 | 9.584 | 94.376 | 83.96 | 6.584 | 58.96 | 1 |
| ## 393 | 96.896 | 26.896 | 86.120 | 17.448 | 83.344 | 101.12 | 0.000 | 77.24 | 4 |
| ## 394 | 50.800 | 18.160 | 94.160 | 8.160 | 92.240 | 80.40 | 5.160 | 55.40 | 1 |
| ## 395 | 98.560 | 28.560 | 88.200 | 18.280 | 85.840 | 103.20 | 0.000 | 81.40 | 4 |
| ## 396 | 51.840 | 18.368 | 94.368 | 8.368 | 92.552 | 80.92 | 5.368 | 55.92 | 1 |
| ## 397 | 49.720 | 17.888 | 98.832 | 7.776 | 96.888 | 78.88 | 8.888 | 54.72 | 0 |
| ## 398 | 83.840 | 23.024 | 90.512 | 13.280 | 88.512 | 96.28 | 0.512 | 67.56 | 3 |
| ## 399 | 86.840 | 23.824 | 90.912 | 14.280 | 88.912 | 97.28 | 0.912 | 69.56 | 3 |
| ## 400 | 85.400 | 23.440 | 90.720 | 13.800 | 88.720 | 96.80 | 0.720 | 68.60 | 3 |
| ## 401 | 80.360 | 22.096 | 90.048 | 12.120 | 88.048 | 95.12 | 0.048 | 65.24 | 3 |
| ## 402 | 85.640 | 23.504 | 90.752 | 13.880 | 88.752 | 96.88 | 0.752 | 68.76 | 3 |
| ## 403 | 96.512 | 26.512 | 85.640 | 17.256 | 82.768 | 100.64 | 0.000 | 76.28 | 4 |
| ## 404 | 78.720 | 21.872 | 93.872 | 11.872 | 91.872 | 94.36 | 4.808 | 64.68 | 2 |
| ## 405 | 62.720 | 20.272 | 92.272 | 10.272 | 90.272 | 86.36 | 2.408 | 60.68 | 2 |
| ## 406 | 84.200 | 23.120 | 90.560 | 13.400 | 88.560 | 96.40 | 0.560 | 67.80 | 3 |
| ## 407 | 56.400 | 19.280 | 95.280 | 9.280 | 93.920 | 83.20 | 6.280 | 58.20 | 1 |
| ## 408 | 83.240 | 22.864 | 90.432 | 13.080 | 88.432 | 96.08 | 0.432 | 67.16 | 3 |
| ## 409 | 90.680 | 24.848 | 91.424 | 15.560 | 89.424 | 98.56 | 1.424 | 72.12 | 3 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 410 | 76.160 | 21.616 | 93.616 | 11.616 | 91.616 | 93.08 | 4.424 | 64.04 | 2 |
| ## 411 | 48.200 | 17.280 | 97.920 | 6.560 | 96.280 | 72.80 | 8.280 | 53.20 | 0 |
| ## 412 | 97.856 | 27.856 | 87.320 | 17.928 | 84.784 | 102.32 | 0.000 | 79.64 | 4 |
| ## 413 | 98.688 | 28.688 | 88.360 | 18.344 | 86.032 | 103.36 | 0.000 | 81.72 | 4 |
| ## 414 | 52.240 | 18.448 | 94.448 | 8.448 | 92.672 | 81.12 | 5.448 | 56.12 | 1 |
| ## 415 | 50.160 | 18.032 | 94.032 | 8.032 | 92.048 | 80.08 | 5.032 | 55.08 | 1 |
| ## 416 | 45.720 | 16.288 | 96.432 | 4.576 | 95.288 | 62.88 | 7.288 | 50.72 | 0 |
| ## 417 | 59.120 | 19.824 | 95.824 | 9.824 | 94.736 | 84.56 | 6.824 | 59.56 | 1 |
| ## 418 | 97.152 | 27.152 | 86.440 | 17.576 | 83.728 | 101.44 | 0.000 | 77.88 | 4 |
| ## 419 | 81.800 | 22.480 | 90.240 | 12.600 | 88.240 | 95.60 | 0.240 | 66.20 | 3 |
| ## 420 | 49.880 | 17.952 | 98.928 | 7.904 | 96.952 | 79.52 | 8.952 | 54.88 | 0 |
| ## 421 | 52.160 | 18.432 | 94.432 | 8.432 | 92.648 | 81.08 | 5.432 | 56.08 | 1 |
| ## 422 | 98.624 | 28.624 | 88.280 | 18.312 | 85.936 | 103.28 | 0.000 | 81.56 | 4 |
| ## 423 | 98.400 | 28.400 | 88.000 | 18.200 | 85.600 | 103.00 | 0.000 | 81.00 | 4 |
| ## 424 | 47.840 | 17.136 | 97.704 | 6.272 | 96.136 | 71.36 | 8.136 | 52.84 | 0 |
| ## 425 | 48.520 | 17.408 | 98.112 | 6.816 | 96.408 | 74.08 | 8.408 | 53.52 | 0 |
| ## 426 | 56.000 | 19.200 | 95.200 | 9.200 | 93.800 | 83.00 | 6.200 | 58.00 | 1 |
| ## 427 | 58.720 | 19.744 | 95.744 | 9.744 | 94.616 | 84.36 | 6.744 | 59.36 | 1 |
| ## 428 | 48.040 | 17.216 | 97.824 | 6.432 | 96.216 | 72.16 | 8.216 | 53.04 | 0 |
| ## 429 | 99.744 | 29.744 | 89.680 | 18.872 | 87.616 | 104.68 | 0.000 | 84.36 | 4 |
| ## 430 | 47.360 | 16.944 | 97.416 | 5.888 | 95.944 | 69.44 | 7.944 | 52.36 | 0 |
| ## 431 | 97.824 | 27.824 | 87.280 | 17.912 | 84.736 | 102.28 | 0.000 | 79.56 | 4 |
| ## 432 | 66.560 | 20.656 | 92.656 | 10.656 | 90.656 | 88.28 | 2.984 | 61.64 | 2 |
| ## 433 | 49.840 | 17.936 | 98.904 | 7.872 | 96.936 | 79.36 | 8.936 | 54.84 | 0 |
| ## 434 | 72.160 | 21.216 | 93.216 | 11.216 | 91.216 | 91.08 | 3.824 | 63.04 | 2 |
| ## 435 | 84.080 | 23.088 | 90.544 | 13.360 | 88.544 | 96.36 | 0.544 | 67.72 | 3 |
| ## 436 | 72.800 | 21.280 | 93.280 | 11.280 | 91.280 | 91.40 | 3.920 | 63.20 | 2 |
| ## 437 | 77.120 | 21.712 | 93.712 | 11.712 | 91.712 | 93.56 | 4.568 | 64.28 | 2 |
| ## 438 | 99.456 | 29.456 | 89.320 | 18.728 | 87.184 | 104.32 | 0.000 | 83.64 | 4 |
| ## 439 | 88.160 | 24.176 | 91.088 | 14.720 | 89.088 | 97.72 | 1.088 | 70.44 | 3 |
| ## 440 | 52.880 | 18.576 | 94.576 | 8.576 | 92.864 | 81.44 | 5.576 | 56.44 | 1 |
| ## 441 | 97.888 | 27.888 | 87.360 | 17.944 | 84.832 | 102.36 | 0.000 | 79.72 | 4 |
| ## 442 | 54.080 | 18.816 | 94.816 | 8.816 | 93.224 | 82.04 | 5.816 | 57.04 | 1 |
| ## 443 | 57.360 | 19.472 | 95.472 | 9.472 | 94.208 | 83.68 | 6.472 | 58.68 | 1 |
| ## 444 | 51.200 | 18.240 | 94.240 | 8.240 | 92.360 | 80.60 | 5.240 | 55.60 | 1 |
| ## 445 | 63.360 | 20.336 | 92.336 | 10.336 | 90.336 | 86.68 | 2.504 | 60.84 | 2 |
| ## 446 | 97.984 | 27.984 | 87.480 | 17.992 | 84.976 | 102.48 | 0.000 | 79.96 | 4 |
| ## 447 | 98.752 | 28.752 | 88.440 | 18.376 | 86.128 | 103.44 | 0.000 | 81.88 | 4 |
| ## 448 | 82.400 | 22.640 | 90.320 | 12.800 | 88.320 | 95.80 | 0.320 | 66.60 | 3 |
| ## 449 | 66.240 | 20.624 | 92.624 | 10.624 | 90.624 | 88.12 | 2.936 | 61.56 | 2 |
| ## 450 | 49.760 | 17.904 | 98.856 | 7.808 | 96.904 | 79.04 | 8.904 | 54.76 | 0 |
| ## 451 | 59.840 | 19.968 | 95.968 | 9.968 | 94.952 | 84.92 | 6.968 | 59.92 | 1 |
| ## 452 | 87.920 | 24.112 | 91.056 | 14.640 | 89.056 | 97.64 | 1.056 | 70.28 | 3 |
| ## 453 | 52.480 | 18.496 | 94.496 | 8.496 | 92.744 | 81.24 | 5.496 | 56.24 | 1 |
| ## 454 | 87.320 | 23.952 | 90.976 | 14.440 | 88.976 | 97.44 | 0.976 | 69.88 | 3 |
| ## 455 | 55.440 | 19.088 | 95.088 | 9.088 | 93.632 | 82.72 | 6.088 | 57.72 | 1 |
| ## 456 | 52.960 | 18.592 | 94.592 | 8.592 | 92.888 | 81.48 | 5.592 | 56.48 | 1 |
| ## 457 | 54.240 | 18.848 | 94.848 | 8.848 | 93.272 | 82.12 | 5.848 | 57.12 | 1 |
| ## 458 | 53.760 | 18.752 | 94.752 | 8.752 | 93.128 | 81.88 | 5.752 | 56.88 | 1 |
| ## 459 | 99.584 | 29.584 | 89.480 | 18.792 | 87.376 | 104.48 | 0.000 | 83.96 | 4 |
| ## 460 | 78.880 | 21.888 | 93.888 | 11.888 | 91.888 | 94.44 | 4.832 | 64.72 | 2 |
| ## 461 | 97.952 | 27.952 | 87.440 | 17.976 | 84.928 | 102.44 | 0.000 | 79.88 | 4 |
| ## 462 | 57.520 | 19.504 | 95.504 | 9.504 | 94.256 | 83.76 | 6.504 | 58.76 | 1 |
| ## 463 | 99.712 | 29.712 | 89.640 | 18.856 | 87.568 | 104.64 | 0.000 | 84.28 | 4 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 464 | 60.800 | 20.080 | 92.080 | 10.080 | 90.080 | 85.40 | 2.120 | 60.20 | 2 |
| ## 465 | 69.920 | 20.992 | 92.992 | 10.992 | 90.992 | 89.96 | 3.488 | 62.48 | 2 |
| ## 466 | 51.520 | 18.304 | 94.304 | 8.304 | 92.456 | 80.76 | 5.304 | 55.76 | 1 |
| ## 467 | 91.280 | 25.008 | 91.504 | 15.760 | 89.504 | 98.76 | 1.504 | 72.52 | 3 |
| ## 468 | 86.120 | 23.632 | 90.816 | 14.040 | 88.816 | 97.04 | 0.816 | 69.08 | 3 |
| ## 469 | 76.320 | 21.632 | 93.632 | 11.632 | 91.632 | 93.16 | 4.448 | 64.08 | 2 |
| ## 470 | 56.320 | 19.264 | 95.264 | 9.264 | 93.896 | 83.16 | 6.264 | 58.16 | 1 |
| ## 471 | 45.400 | 16.160 | 96.240 | 4.320 | 95.160 | 61.60 | 7.160 | 50.40 | 0 |
| ## 472 | 48.920 | 17.568 | 98.352 | 7.136 | 96.568 | 75.68 | 8.568 | 53.92 | 0 |
| ## 473 | 94.160 | 25.776 | 91.888 | 16.720 | 89.888 | 99.72 | 1.888 | 74.44 | 3 |
| ## 474 | 51.760 | 18.352 | 94.352 | 8.352 | 92.528 | 80.88 | 5.352 | 55.88 | 1 |
| ## 475 | 45.920 | 16.368 | 96.552 | 4.736 | 95.368 | 63.68 | 7.368 | 50.92 | 0 |
| ## 476 | 91.040 | 24.944 | 91.472 | 15.680 | 89.472 | 98.68 | 1.472 | 72.36 | 3 |
| ## 477 | 54.800 | 18.960 | 94.960 | 8.960 | 93.440 | 82.40 | 5.960 | 57.40 | 1 |
| ## 478 | 49.960 | 17.984 | 98.976 | 7.968 | 96.984 | 79.84 | 8.984 | 54.96 | 0 |
| ## 479 | 51.280 | 18.256 | 94.256 | 8.256 | 92.384 | 80.64 | 5.256 | 55.64 | 1 |
| ## 480 | 99.360 | 29.360 | 89.200 | 18.680 | 87.040 | 104.20 | 0.000 | 83.40 | 4 |
| ## 481 | 47.760 | 17.104 | 97.656 | 6.208 | 96.104 | 71.04 | 8.104 | 52.76 | 0 |
| ## 482 | 46.960 | 16.784 | 97.176 | 5.568 | 95.784 | 67.84 | 7.784 | 51.96 | 0 |
| ## 483 | 92.600 | 25.360 | 91.680 | 16.200 | 89.680 | 99.20 | 1.680 | 73.40 | 3 |
| ## 484 | 68.160 | 20.816 | 92.816 | 10.816 | 90.816 | 89.08 | 3.224 | 62.04 | 2 |
| ## 485 | 61.280 | 20.128 | 92.128 | 10.128 | 90.128 | 85.64 | 2.192 | 60.32 | 2 |
| ## 486 | 96.832 | 26.832 | 86.040 | 17.416 | 83.248 | 101.04 | 0.000 | 77.08 | 4 |
| ## 487 | 52.720 | 18.544 | 94.544 | 8.544 | 92.816 | 81.36 | 5.544 | 56.36 | 1 |
| ## 488 | 82.160 | 22.576 | 90.288 | 12.720 | 88.288 | 95.72 | 0.288 | 66.44 | 3 |
| ## 489 | 63.040 | 20.304 | 92.304 | 10.304 | 90.304 | 86.52 | 2.456 | 60.76 | 2 |
| ## 490 | 99.232 | 29.232 | 89.040 | 18.616 | 86.848 | 104.04 | 0.000 | 83.08 | 4 |
| ## 491 | 63.840 | 20.384 | 92.384 | 10.384 | 90.384 | 86.92 | 2.576 | 60.96 | 2 |
| ## 492 | 99.424 | 29.424 | 89.280 | 18.712 | 87.136 | 104.28 | 0.000 | 83.56 | 4 |
| ## 493 | 60.640 | 20.064 | 92.064 | 10.064 | 90.064 | 85.32 | 2.096 | 60.16 | 2 |
| ## 494 | 59.200 | 19.840 | 95.840 | 9.840 | 94.760 | 84.60 | 6.840 | 59.60 | 1 |
| ## 495 | 89.720 | 24.592 | 91.296 | 15.240 | 89.296 | 98.24 | 1.296 | 71.48 | 3 |
| ## 496 | 46.560 | 16.624 | 96.936 | 5.248 | 95.624 | 66.24 | 7.624 | 51.56 | 0 |
| ## 497 | 50.080 | 18.016 | 94.016 | 8.016 | 92.024 | 80.04 | 5.016 | 55.04 | 1 |
| ## 498 | 49.160 | 17.664 | 98.496 | 7.328 | 96.664 | 76.64 | 8.664 | 54.16 | 0 |
| ## 499 | 46.880 | 16.752 | 97.128 | 5.504 | 95.752 | 67.52 | 7.752 | 51.88 | 0 |
| ## 500 | 83.720 | 22.992 | 90.496 | 13.240 | 88.496 | 96.24 | 0.496 | 67.48 | 3 |
| ## 501 | 63.520 | 20.352 | 92.352 | 10.352 | 90.352 | 86.76 | 2.528 | 60.88 | 2 |
| ## 502 | 96.128 | 26.128 | 85.160 | 17.064 | 82.192 | 100.16 | 0.000 | 75.32 | 4 |
| ## 503 | 80.480 | 22.128 | 90.064 | 12.160 | 88.064 | 95.16 | 0.064 | 65.32 | 3 |
| ## 504 | 45.800 | 16.320 | 96.480 | 4.640 | 95.320 | 63.20 | 7.320 | 50.80 | 0 |
| ## 505 | 47.160 | 16.864 | 97.296 | 5.728 | 95.864 | 68.64 | 7.864 | 52.16 | 0 |
| ## 506 | 99.264 | 29.264 | 89.080 | 18.632 | 86.896 | 104.08 | 0.000 | 83.16 | 4 |
| ## 507 | 60.320 | 20.032 | 92.032 | 10.032 | 90.032 | 85.16 | 2.048 | 60.08 | 2 |
| ## 508 | 96.224 | 26.224 | 85.280 | 17.112 | 82.336 | 100.28 | 0.000 | 75.56 | 4 |
| ## 509 | 99.008 | 29.008 | 88.760 | 18.504 | 86.512 | 103.76 | 0.000 | 82.52 | 4 |
| ## 510 | 50.880 | 18.176 | 94.176 | 8.176 | 92.264 | 80.44 | 5.176 | 55.44 | 1 |
| ## 511 | 78.240 | 21.824 | 93.824 | 11.824 | 91.824 | 94.12 | 4.736 | 64.56 | 2 |
| ## 512 | 89.240 | 24.464 | 91.232 | 15.080 | 89.232 | 98.08 | 1.232 | 71.16 | 3 |
| ## 513 | 47.920 | 17.168 | 97.752 | 6.336 | 96.168 | 71.68 | 8.168 | 52.92 | 0 |
| ## 514 | 51.680 | 18.336 | 94.336 | 8.336 | 92.504 | 80.84 | 5.336 | 55.84 | 1 |
| ## 515 | 46.480 | 16.592 | 96.888 | 5.184 | 95.592 | 65.92 | 7.592 | 51.48 | 0 |
| ## 516 | 82.040 | 22.544 | 90.272 | 12.680 | 88.272 | 95.68 | 0.272 | 66.36 | 3 |
| ## 517 | 49.640 | 17.856 | 98.784 | 7.712 | 96.856 | 78.56 | 8.856 | 54.64 | 0 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 518 | 46.720 | 16.688 | 97.032 | 5.376 | 95.688 | 66.88 | 7.688 | 51.72 | 0 |
| ## 519 | 67.520 | 20.752 | 92.752 | 10.752 | 90.752 | 88.76 | 3.128 | 61.88 | 2 |
| ## 520 | 53.280 | 18.656 | 94.656 | 8.656 | 92.984 | 81.64 | 5.656 | 56.64 | 1 |
| ## 521 | 45.760 | 16.304 | 96.456 | 4.608 | 95.304 | 63.04 | 7.304 | 50.76 | 0 |
| ## 522 | 46.400 | 16.560 | 96.840 | 5.120 | 95.560 | 65.60 | 7.560 | 51.40 | 0 |
| ## 523 | 99.520 | 29.520 | 89.400 | 18.760 | 87.280 | 104.40 | 0.000 | 83.80 | 4 |
| ## 524 | 46.440 | 16.576 | 96.864 | 5.152 | 95.576 | 65.76 | 7.576 | 51.44 | 0 |
| ## 525 | 99.200 | 29.200 | 89.000 | 18.600 | 86.800 | 104.00 | 0.000 | 83.00 | 4 |
| ## 526 | 53.840 | 18.768 | 94.768 | 8.768 | 93.152 | 81.92 | 5.768 | 56.92 | 1 |
| ## 527 | 79.520 | 21.952 | 93.952 | 11.952 | 91.952 | 94.76 | 4.928 | 64.88 | 2 |
| ## 528 | 96.544 | 26.544 | 85.680 | 17.272 | 82.816 | 100.68 | 0.000 | 76.36 | 4 |
| ## 529 | 80.600 | 22.160 | 90.080 | 12.200 | 88.080 | 95.20 | 0.080 | 65.40 | 3 |
| ## 530 | 79.680 | 21.968 | 93.968 | 11.968 | 91.968 | 94.84 | 4.952 | 64.92 | 2 |
| ## 531 | 98.944 | 28.944 | 88.680 | 18.472 | 86.416 | 103.68 | 0.000 | 82.36 | 4 |
| ## 532 | 47.600 | 17.040 | 97.560 | 6.080 | 96.040 | 70.40 | 8.040 | 52.60 | 0 |
| ## 533 | 81.680 | 22.448 | 90.224 | 12.560 | 88.224 | 95.56 | 0.224 | 66.12 | 3 |
| ## 534 | 59.920 | 19.984 | 95.984 | 9.984 | 94.976 | 84.96 | 6.984 | 59.96 | 1 |
| ## 535 | 48.960 | 17.584 | 98.376 | 7.168 | 96.584 | 75.84 | 8.584 | 53.96 | 0 |
| ## 536 | 48.160 | 17.264 | 97.896 | 6.528 | 96.264 | 72.64 | 8.264 | 53.16 | 0 |
| ## 537 | 58.400 | 19.680 | 95.680 | 9.680 | 94.520 | 84.20 | 6.680 | 59.20 | 1 |
| ## 538 | 97.728 | 27.728 | 87.160 | 17.864 | 84.592 | 102.16 | 0.000 | 79.32 | 4 |
| ## 539 | 70.240 | 21.024 | 93.024 | 11.024 | 91.024 | 90.12 | 3.536 | 62.56 | 2 |
| ## 540 | 85.280 | 23.408 | 90.704 | 13.760 | 88.704 | 96.76 | 0.704 | 68.52 | 3 |
| ## 541 | 46.320 | 16.528 | 96.792 | 5.056 | 95.528 | 65.28 | 7.528 | 51.32 | 0 |
| ## 542 | 54.480 | 18.896 | 94.896 | 8.896 | 93.344 | 82.24 | 5.896 | 57.24 | 1 |
| ## 543 | 87.680 | 24.048 | 91.024 | 14.560 | 89.024 | 97.56 | 1.024 | 70.12 | 3 |
| ## 544 | 99.296 | 29.296 | 89.120 | 18.648 | 86.944 | 104.12 | 0.000 | 83.24 | 4 |
| ## 545 | 80.240 | 22.064 | 90.032 | 12.080 | 88.032 | 95.08 | 0.032 | 65.16 | 3 |
| ## 546 | 98.816 | 28.816 | 88.520 | 18.408 | 86.224 | 103.52 | 0.000 | 82.04 | 4 |
| ## 547 | 64.480 | 20.448 | 92.448 | 10.448 | 90.448 | 87.24 | 2.672 | 61.12 | 2 |
| ## 548 | 99.648 | 29.648 | 89.560 | 18.824 | 87.472 | 104.56 | 0.000 | 84.12 | 4 |
| ## 549 | 64.960 | 20.496 | 92.496 | 10.496 | 90.496 | 87.48 | 2.744 | 61.24 | 2 |
| ## 550 | 82.640 | 22.704 | 90.352 | 12.880 | 88.352 | 95.88 | 0.352 | 66.76 | 3 |
| ## 551 | 46.520 | 16.608 | 96.912 | 5.216 | 95.608 | 66.08 | 7.608 | 51.52 | 0 |
| ## 552 | 91.880 | 25.168 | 91.584 | 15.960 | 89.584 | 98.96 | 1.584 | 72.92 | 3 |
| ## 553 | 64.800 | 20.480 | 92.480 | 10.480 | 90.480 | 87.40 | 2.720 | 61.20 | 2 |
| ## 554 | 49.040 | 17.616 | 98.424 | 7.232 | 96.616 | 76.16 | 8.616 | 54.04 | 0 |
| ## 555 | 75.040 | 21.504 | 93.504 | 11.504 | 91.504 | 92.52 | 4.256 | 63.76 | 2 |
| ## 556 | 87.080 | 23.888 | 90.944 | 14.360 | 88.944 | 97.36 | 0.944 | 69.72 | 3 |
| ## 557 | 76.640 | 21.664 | 93.664 | 11.664 | 91.664 | 93.32 | 4.496 | 64.16 | 2 |
| ## 558 | 85.880 | 23.568 | 90.784 | 13.960 | 88.784 | 96.96 | 0.784 | 68.92 | 3 |
| ## 559 | 99.488 | 29.488 | 89.360 | 18.744 | 87.232 | 104.36 | 0.000 | 83.72 | 4 |
| ## 560 | 51.440 | 18.288 | 94.288 | 8.288 | 92.432 | 80.72 | 5.288 | 55.72 | 1 |
| ## 561 | 58.000 | 19.600 | 95.600 | 9.600 | 94.400 | 84.00 | 6.600 | 59.00 | 1 |
| ## 562 | 49.480 | 17.792 | 98.688 | 7.584 | 96.792 | 77.92 | 8.792 | 54.48 | 0 |
| ## 563 | 70.400 | 21.040 | 93.040 | 11.040 | 91.040 | 90.20 | 3.560 | 62.60 | 2 |
| ## 564 | 72.960 | 21.296 | 93.296 | 11.296 | 91.296 | 91.48 | 3.944 | 63.24 | 2 |
| ## 565 | 94.400 | 25.840 | 91.920 | 16.800 | 89.920 | 99.80 | 1.920 | 74.60 | 3 |
| ## 566 | 54.720 | 18.944 | 94.944 | 8.944 | 93.416 | 82.36 | 5.944 | 57.36 | 1 |
| ## 567 | 80.840 | 22.224 | 90.112 | 12.280 | 88.112 | 95.28 | 0.112 | 65.56 | 3 |
| ## 568 | 94.640 | 25.904 | 91.952 | 16.880 | 89.952 | 99.88 | 1.952 | 74.76 | 3 |
| ## 569 | 91.520 | 25.072 | 91.536 | 15.840 | 89.536 | 98.84 | 1.536 | 72.68 | 3 |
| ## 570 | 97.600 | 27.600 | 87.000 | 17.800 | 84.400 | 102.00 | 0.000 | 79.00 | 4 |
| ## 571 | 99.840 | 29.840 | 89.800 | 18.920 | 87.760 | 104.80 | 0.000 | 84.60 | 4 |

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|--------|--------|--------|--------|--------|--------|--------|-------|-------|---|
| ## 572 | 85.520 | 23.472 | 90.736 | 13.840 | 88.736 | 96.84 | 0.736 | 68.68 | 3 |
| ## 573 | 54.160 | 18.832 | 94.832 | 8.832 | 93.248 | 82.08 | 5.832 | 57.08 | 1 |
| ## 574 | 55.360 | 19.072 | 95.072 | 9.072 | 93.608 | 82.68 | 6.072 | 57.68 | 1 |
| ## 575 | 46.160 | 16.464 | 96.696 | 4.928 | 95.464 | 64.64 | 7.464 | 51.16 | 0 |
| ## 576 | 96.416 | 26.416 | 85.520 | 17.208 | 82.624 | 100.52 | 0.000 | 76.04 | 4 |
| ## 577 | 86.000 | 23.600 | 90.800 | 14.000 | 88.800 | 97.00 | 0.800 | 69.00 | 3 |
| ## 578 | 79.840 | 21.984 | 93.984 | 11.984 | 91.984 | 94.92 | 4.976 | 64.96 | 2 |
| ## 579 | 90.800 | 24.880 | 91.440 | 15.600 | 89.440 | 98.60 | 1.440 | 72.20 | 3 |
| ## 580 | 96.352 | 26.352 | 85.440 | 17.176 | 82.528 | 100.44 | 0.000 | 75.88 | 4 |
| ## 581 | 55.600 | 19.120 | 95.120 | 9.120 | 93.680 | 82.80 | 6.120 | 57.80 | 1 |
| ## 582 | 72.000 | 21.200 | 93.200 | 11.200 | 91.200 | 91.00 | 3.800 | 63.00 | 2 |
| ## 583 | 84.560 | 23.216 | 90.608 | 13.520 | 88.608 | 96.52 | 0.608 | 68.04 | 3 |
| ## 584 | 59.760 | 19.952 | 95.952 | 9.952 | 94.928 | 84.88 | 6.952 | 59.88 | 1 |
| ## 585 | 83.000 | 22.800 | 90.400 | 13.000 | 88.400 | 96.00 | 0.400 | 67.00 | 3 |
| ## 586 | 74.240 | 21.424 | 93.424 | 11.424 | 91.424 | 92.12 | 4.136 | 63.56 | 2 |
| ## 587 | 45.240 | 16.096 | 96.144 | 4.192 | 95.096 | 60.96 | 7.096 | 50.24 | 0 |
| ## 588 | 49.440 | 17.776 | 98.664 | 7.552 | 96.776 | 77.76 | 8.776 | 54.44 | 0 |
| ## 589 | 66.720 | 20.672 | 92.672 | 10.672 | 90.672 | 88.36 | 3.008 | 61.68 | 2 |
| ## 590 | 54.000 | 18.800 | 94.800 | 8.800 | 93.200 | 82.00 | 5.800 | 57.00 | 1 |
| ## 591 | 94.520 | 25.872 | 91.936 | 16.840 | 89.936 | 99.84 | 1.936 | 74.68 | 3 |
| ## 592 | 47.560 | 17.024 | 97.536 | 6.048 | 96.024 | 70.24 | 8.024 | 52.56 | 0 |
| ## 593 | 47.640 | 17.056 | 97.584 | 6.112 | 96.056 | 70.56 | 8.056 | 52.64 | 0 |
| ## 594 | 47.480 | 16.992 | 97.488 | 5.984 | 95.992 | 69.92 | 7.992 | 52.48 | 0 |
| ## 595 | 97.120 | 27.120 | 86.400 | 17.560 | 83.680 | 101.40 | 0.000 | 77.80 | 4 |
| ## 596 | 69.280 | 20.928 | 92.928 | 10.928 | 90.928 | 89.64 | 3.392 | 62.32 | 2 |
| ## 597 | 98.976 | 28.976 | 88.720 | 18.488 | 86.464 | 103.72 | 0.000 | 82.44 | 4 |
| ## 598 | 45.640 | 16.256 | 96.384 | 4.512 | 95.256 | 62.56 | 7.256 | 50.64 | 0 |
| ## 599 | 99.104 | 29.104 | 88.880 | 18.552 | 86.656 | 103.88 | 0.000 | 82.76 | 4 |
| ## 600 | 99.328 | 29.328 | 89.160 | 18.664 | 86.992 | 104.16 | 0.000 | 83.32 | 4 |
| ## 601 | 93.560 | 25.616 | 91.808 | 16.520 | 89.808 | 99.52 | 1.808 | 74.04 | 3 |
| ## 602 | 57.760 | 19.552 | 95.552 | 9.552 | 94.328 | 83.88 | 6.552 | 58.88 | 1 |
| ## 603 | 56.960 | 19.392 | 95.392 | 9.392 | 94.088 | 83.48 | 6.392 | 58.48 | 1 |
| ## 604 | 55.840 | 19.168 | 95.168 | 9.168 | 93.752 | 82.92 | 6.168 | 57.92 | 1 |
| ## 605 | 48.320 | 17.328 | 97.992 | 6.656 | 96.328 | 73.28 | 8.328 | 53.32 | 0 |
| ## 606 | 94.040 | 25.744 | 91.872 | 16.680 | 89.872 | 99.68 | 1.872 | 74.36 | 3 |
| ## 607 | 97.760 | 27.760 | 87.200 | 17.880 | 84.640 | 102.20 | 0.000 | 79.40 | 4 |
| ## 608 | 67.200 | 20.720 | 92.720 | 10.720 | 90.720 | 88.60 | 3.080 | 61.80 | 2 |
| ## 609 | 57.840 | 19.568 | 95.568 | 9.568 | 94.352 | 83.92 | 6.568 | 58.92 | 1 |
| ## 610 | 54.640 | 18.928 | 94.928 | 8.928 | 93.392 | 82.32 | 5.928 | 57.32 | 1 |
| ## 611 | 93.680 | 25.648 | 91.824 | 16.560 | 89.824 | 99.56 | 1.824 | 74.12 | 3 |
| ## 612 | 98.592 | 28.592 | 88.240 | 18.296 | 85.888 | 103.24 | 0.000 | 81.48 | 4 |
| ## 613 | 88.880 | 24.368 | 91.184 | 14.960 | 89.184 | 97.96 | 1.184 | 70.92 | 3 |
| ## 614 | 73.600 | 21.360 | 93.360 | 11.360 | 91.360 | 91.80 | 4.040 | 63.40 | 2 |
| ## 615 | 62.400 | 20.240 | 92.240 | 10.240 | 90.240 | 86.20 | 2.360 | 60.60 | 2 |
| ## 616 | 82.880 | 22.768 | 90.384 | 12.960 | 88.384 | 95.96 | 0.384 | 66.92 | 3 |
| ## 617 | 59.040 | 19.808 | 95.808 | 9.808 | 94.712 | 84.52 | 6.808 | 59.52 | 1 |
| ## 618 | 71.680 | 21.168 | 93.168 | 11.168 | 91.168 | 90.84 | 3.752 | 62.92 | 2 |
| ## 619 | 48.400 | 17.360 | 98.040 | 6.720 | 96.360 | 73.60 | 8.360 | 53.40 | 0 |
| ## 620 | 46.080 | 16.432 | 96.648 | 4.864 | 95.432 | 64.32 | 7.432 | 51.08 | 0 |
| ## 621 | 97.024 | 27.024 | 86.280 | 17.512 | 83.536 | 101.28 | 0.000 | 77.56 | 4 |
| ## 622 | 53.200 | 18.640 | 94.640 | 8.640 | 92.960 | 81.60 | 5.640 | 56.60 | 1 |
| ## 623 | 65.440 | 20.544 | 92.544 | 10.544 | 90.544 | 87.72 | 2.816 | 61.36 | 2 |
| ## 624 | 98.144 | 28.144 | 87.680 | 18.072 | 85.216 | 102.68 | 0.000 | 80.36 | 4 |
| ## 625 | 58.800 | 19.760 | 95.760 | 9.760 | 94.640 | 84.40 | 6.760 | 59.40 | 1 |

```
## 626 69.600      20.960  92.960 10.960 90.960  89.80    3.440 62.40    2
## 627 48.440      17.376  98.064  6.752 96.376  73.76    8.376 53.44    0
## 628 97.504      27.504  86.880 17.752 84.256 101.88    0.000 78.76    4
## 629 58.640      19.728  95.728  9.728 94.592  84.32    6.728 59.32    1
## 630 73.920      21.392  93.392 11.392 91.392  91.96    4.088 63.48    2
```

Playing with the data

```
summary(sleep_stress)
```

```
##      snoring      respiration      bodytemp      limb      blood0
## Min.   : 45.00   Min.   :16.0   Min.   :85.0   Min.   : 4.00   Min.   :82.00
## 1st Qu.: 52.50   1st Qu.:18.5   1st Qu.:90.5   1st Qu.: 8.50   1st Qu.:88.50
## Median : 70.00   Median :21.0   Median :93.0   Median :11.00   Median :91.00
## Mean   : 71.60   Mean   :21.8   Mean   :92.8   Mean   :11.70   Mean   :90.90
## 3rd Qu.: 91.25   3rd Qu.:25.0   3rd Qu.:95.5   3rd Qu.:15.75   3rd Qu.:94.25
## Max.   :100.00   Max.   :30.0   Max.   :99.0   Max.   :19.00   Max.   :97.00
##      eye      sleephrs      heart      stress
## Min.   : 60.00   Min.   :0.0   Min.   :50.00   Min.   :0
## 1st Qu.: 81.25   1st Qu.:0.5   1st Qu.:56.25   1st Qu.:1
## Median : 90.00   Median :3.5   Median :62.50   Median :2
## Mean   : 88.50   Mean   :3.7   Mean   :64.50   Mean   :2
## 3rd Qu.: 98.75   3rd Qu.:6.5   3rd Qu.:72.50   3rd Qu.:3
## Max.   :105.00   Max.   :9.0   Max.   :85.00   Max.   :4
```

```
#correlation
```

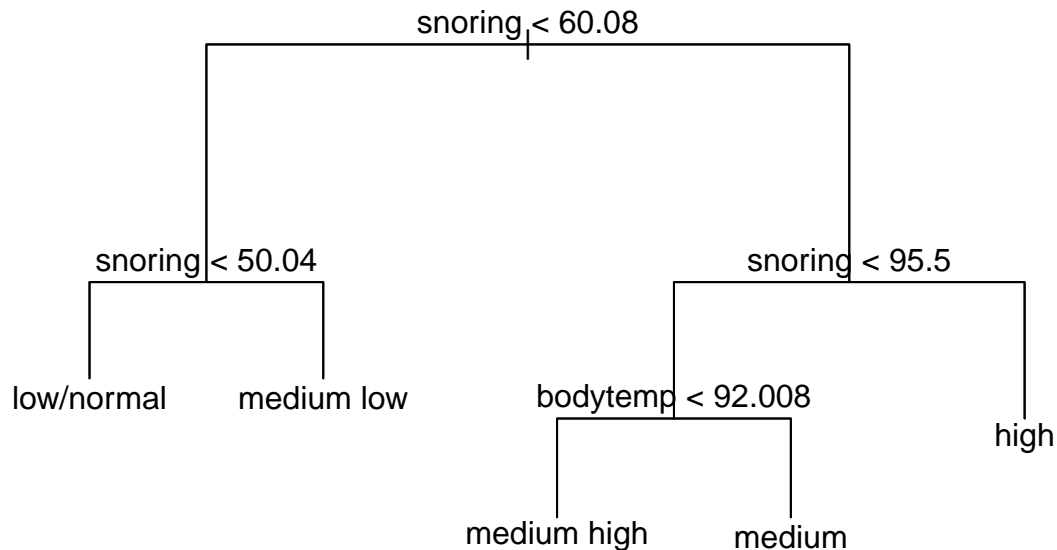
```
cor(sleep_stress)
```

```
##      snoring respiration bodytemp      limb      blood0      eye
## snoring      1.0000000  0.9762677 -0.9024745  0.9810777 -0.9031398  0.9505999
## respiration  0.9762677  1.0000000 -0.8892374  0.9917377 -0.8892103  0.9355719
## bodytemp    -0.9024745 -0.8892374  1.0000000 -0.8964115  0.9981078 -0.8572988
## limb         0.9810777  0.9917377 -0.8964115  1.0000000 -0.8985274  0.9647027
## blood0      -0.9031398 -0.8892103  0.9981078 -0.8985274  1.0000000 -0.8621364
## eye         0.9505999  0.9355719 -0.8572988  0.9647027 -0.8621364  1.0000000
## sleephrs    -0.9205545 -0.8918548  0.9548602 -0.9011023  0.9501888 -0.8939521
## heart       0.9762677  1.0000000 -0.8892374  0.9917377 -0.8892103  0.9355719
## stress      0.9753221  0.9635159 -0.9623536  0.9710710 -0.9610916  0.9519875
##      sleephrs      heart      stress
## snoring    -0.9205545  0.9762677  0.9753221
## respiration -0.8918548  1.0000000  0.9635159
## bodytemp    0.9548602 -0.8892374 -0.9623536
## limb       -0.9011023  0.9917377  0.9710710
## blood0      0.9501888 -0.8892103 -0.9610916
## eye        -0.8939521  0.9355719  0.9519875
## sleephrs    1.0000000 -0.8918548 -0.9730359
## heart      -0.8918548  1.0000000  0.9635159
## stress     -0.9730359  0.9635159  1.0000000
```

```
pairs(sleep_stress)
```



```
plot(tree.sleep.stress)
text(tree.sleep.stress,pretty = 0)
```



With training and testing sets

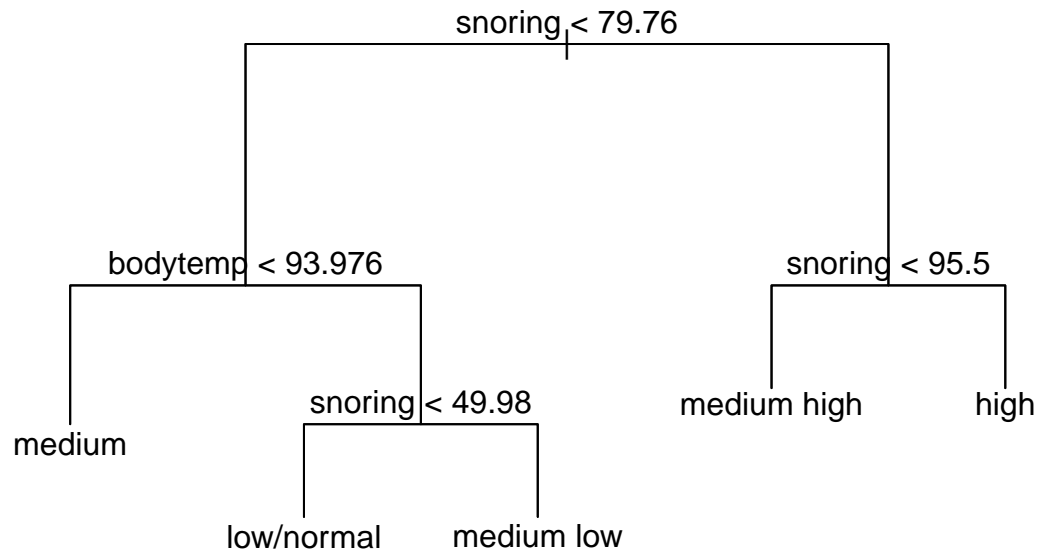
```
#for(i in 1:10){

##training and testing sets
set.seed(2)
sample =sample(nrow(sleep_stress), nrow(sleep_stress)*.8)
train = sleep_stress[sample,]
test = sleep_stress[-sample,]

##unpruned
tree.model = tree(stress ~ ., data = sleep_stress,subset = sample)
summary(tree.model)

##
## Classification tree:
## tree(formula = stress ~ ., data = sleep_stress, subset = sample)
## Variables actually used in tree construction:
## [1] "snoring" "bodytemp"
## Number of terminal nodes: 5
## Residual mean deviance: 0.04488 = 22.39 / 499
## Misclassification error rate: 0.003968 = 2 / 504

plot(tree.model)
text(tree.model, pretty=TRUE)
```



```
##testing the unpruned model
```

```
model.pred = predict(tree.model,test,type = "class")
matrix = table(model.pred,test$stress)
matrix
```

```
##
## model.pred      high low/normal medium medium high medium low
##   high           26         0         0           0           0
##  low/normal       0         25         0           0           0
##   medium          0         0        20           0           0
##  medium high      0         0         1          21           0
##  medium low       0         0         0           0          33
```

```
#error rate
```

```
matrix[4,3]/sum(matrix)
```

```
## [1] 0.007936508
```

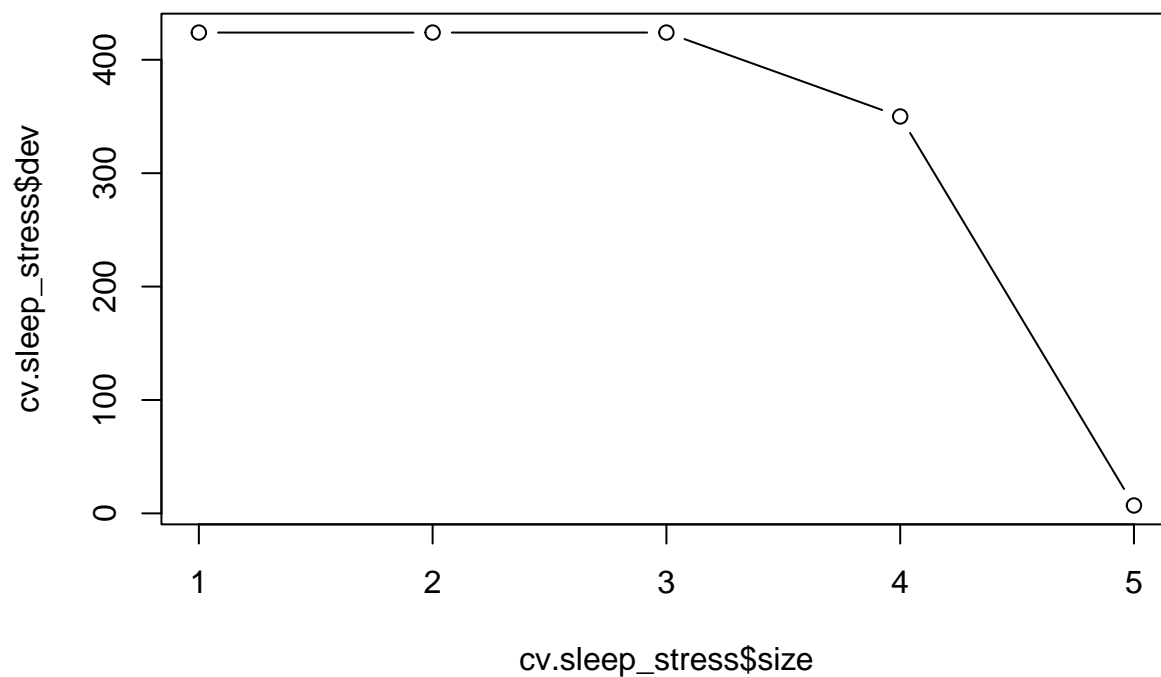
```
##cross validation
```

```
cv.sleep_stress = cv.tree(tree.model,FUN = prune.misclass)
cv.sleep_stress
```

```
## $size
## [1] 5 4 3 2 1
##
## $dev
## [1] 7 350 424 424 424
##
## $k
## [1] -Inf 92 100 101 104
##
## $method
## [1] "misclass"
##
## attr(,"class")
## [1] "prune"          "tree.sequence"
```


5 is still the best number of nodes

```
plot(cv.sleep_stress$size, cv.sleep_stress$dev, type = "b")
```

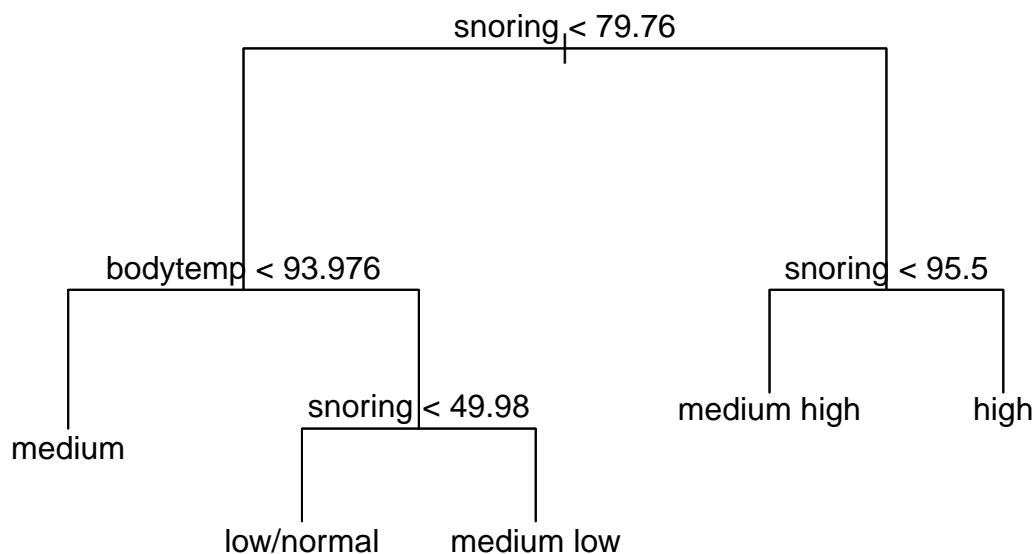


##prune

```
prune.sleep_stress = prune.misclass(tree.model, best = 5)
```

```
plot(prune.sleep_stress)
```

```
text(prune.sleep_stress, pretty = 0)
```



##testing the pruned model

```
tree.pred = predict(prune.sleep_stress, test, type = "class")
```

```
matrix2 = table(tree.pred, test$stress)
```

```
matrix2
```

##

```
## tree.pred      high low/normal medium medium high medium low
##   high          26          0      0          0          0
##   low/normal    0          25      0          0          0
##   medium        0          0     20          0          0
##   medium high   0          0      1         21          0
##   medium low    0          0      0          0         33
```

```
##error rate
```

```
matrix2[4,3]/sum(matrix2)
```

```
## [1] 0.007936508
```

```
#}
```

Random Forest

```
library(randomForest)
```

```
## randomForest 4.7-1
```

```
## Type rfNews() to see new features/changes/bug fixes.
```

```
means.rf = c(); #creating empty list to collect each mean value
```

```
for (i in c(1:10)) #setting up the for loop for each seed i
{
  set.seed(i)
```

```
sleep_stress$stress = as.factor(sleep_stress$stress) # setting the data response as a factor
train.rf = sample(nrow(sleep_stress), nrow(sleep_stress)*.8) # 80/20 training and testing set
test.rf = sleep_stress[-train.rf,] # testing set
```

```
sleep.rf = randomForest(stress ~., data = sleep_stress, # random forest model w/ training data
                        subset = train.rf,
                        mtry=(ncol(sleep_stress)-1)/3 ,
                        importance = TRUE)
```

```
sleep.rf
```

```
yhat.rf = predict(sleep.rf, newdata = test.rf) # running model w/ test data
```

```
#mean((yhat.rf - test.rf$stress)^2)
```

```
means.rf[i] = mean((yhat.rf != test.rf$stress)^2) #
```

```
}
```

```
print("Mean values of each i:")
```

```
## [1] "Mean values of each i:"
```

```
print(means.rf)
```

```
## [1] 0.007936508 0.000000000 0.015873016 0.007936508 0.000000000 0.023809524
```

```
## [7] 0.000000000 0.000000000 0.007936508 0.007936508
```

```
print(mean(means.rf))
```

```
## [1] 0.007142857
```

```
importance(sleep.rf)
```

```
##           high low/normal   medium medium high medium low
## snoring      18.10644    8.540757 13.86441    15.87917 10.809263
## respiration  15.30752    9.532899 13.42997    14.47454 10.112782
## bodytemp     15.09742   10.719860 14.98612    14.67069 14.145856
## limb         15.13767   10.024150 13.73223    14.43114 11.038734
## bloodO       14.65176   10.232573 15.18581    14.22290 14.014906
## eye          13.94597    8.488776 12.72177    13.13642  9.991061
## sleephrs     13.61870    9.646972 14.21671    13.33344 12.965631
## heart        15.43796    9.401738 13.87631    14.77579 11.442773
##           MeanDecreaseAccuracy MeanDecreaseGini
## snoring                19.02860         57.04361
## respiration             17.14627         48.92960
## bodytemp                18.41036         52.90056
## limb                    17.66377         51.53925
## bloodO                  18.40518         52.27210
## eye                     15.24669         42.89695
## sleephrs                16.81701         45.98360
## heart                   17.26682         50.21776
```

```
varImpPlot(sleep.rf, sort = TRUE, main = "Output")
```

Output

