Day 3

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Shared

```
binary = as.data.frame(t(sapply(readLines("input"), function(x) {
  as.numeric(unlist(strsplit(x, '')))
})))
head(binary)
```

```
##              V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12
## 101001100010  1  0  1  0  0  1  1  0  0   0   1   0
## 010100001011  0  1  0  1  0  0  0  0  1   0   1   1
## 010010010101  0  1  0  0  1  0  0  1  0   1   0   1
## 110100011010  1  1  0  1  0  0  0  1  1   0   1   0
## 001100100001  0  0  1  1  0  0  1  0  0   0   0   1
## 111111110110  1  1  1  1  1  1  1  1  0   1   1   0
```

Problem 1

```
(tabled = apply(binary, 2, table))
```

```
##    V1  V2  V3  V4  V5  V6  V7  V8  V9 V10 V11 V12
## 0 501 511 502 510 498 516 485 492 498 482 483 513
## 1 499 489 498 490 502 484 515 508 502 518 517 487
```

```
gamma_string = paste(apply(tabled, 2, which.max) - 1, collapse='')
eps_string = paste(apply(tabled, 2, which.min) - 1, collapse='')
gamma = strtoi(gamma_string, base=2)
epsilon = strtoi(eps_string, base=2)
data.frame(gamma_string, eps_string, gamma, epsilon, result = gamma * epsilon)
```

```
##   gamma_string   eps_string gamma epsilon result
## 1 000010111110 111101000001   190    3905 741950
```

Problem 2

```
refine = function(binary, col, compare) {
  if (nrow(binary) == 1) {
    return(binary)
  }
  tabled = table(binary[,col])
  if (tabled[1] == tabled[2]) {
    dc = compare(c(0, 1)) - 1
  } else {
    dc = compare(tabled) - 1
  }
  binary[binary[,col] == dc,]
}

gamma_table = binary
eps_table = binary
for (i in seq(ncol(binary))) {
  gamma_table = refine(gamma_table, i, which.max)
  eps_table = refine(eps_table, i, which.min)
}

o2_string = rownames(gamma_table)
co2_string = rownames(eps_table)
o2 = strtoi(o2_string, base=2)
co2 = strtoi(co2_string, base=2)
data.frame(o2_string, co2_string, o2, co2, rating = o2*co2)
```

```
##      o2_string   co2_string  o2  co2 rating
## 1 000100011010 110010000101 282 3205 903810
```