

# SEC 1\_FA3 GROUP 3\_Mercado, C; Sinocruz, A\_FA3

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## Problem 2

There are three employees working at an IT company: Jane, Amy, and Ava, doing 10%, 30%, and 60% of the programming, respectively. 8% of Jane's work, 5% of Amy's work, and just 1% of Ava's work is in error. What is the overall percentage of error? If a program is found with an error, who is the most likely person to have written it?

First is to declare the employees, their works and percent errors. Then compute for the overall percentage error by multiplying the percentage of the employee's work to their percentage error. Then add all and multiply by 100.

```
employees <- c("Jane", "Amy", "Ava")
works <- c(0.10, 0.30, 0.60) # their works
errorpercent <- c(0.08, 0.05, 0.01) # percentage of their work in error

# Compute overall error percentage
overallpercent <- sum(works * errorpercent)
cat("The overall error percentage is ", overallpercent * 100, "%.\n")
```

```
## The overall error percentage is 2.9 %.
```

For the next question, to get the probability of who is the most likely person to have written the a program with errors, we use Bayes' Theorem.

```
error_per_person <- works * errorpercent
person_per_error <- error_per_person / overallpercent

for (i in 1:length(employees)) {
  cat("The probability that", employees[i], "made an error is", round(person_per_error[i] *
  100, 2), "%.\n")
}
```

```
## The probability that Jane made an error is 27.59 %.
## The probability that Amy made an error is 51.72 %.
## The probability that Ava made an error is 20.69 %.
```

```
mostlikely <- employees[which.max(person_per_error)]  
cat("The most likely person to have written an erroneous program is", mostlikely, "\n")
```

```
## The most likely person to have written an erroneous program is Amy
```