R Scripts for Zepto Valuation – Monte Carlo Simulation

```
# Step 1: Load libraries
library(ggplot2)
library(dplyr)

# Step 2: Set parameters
set.seed(42)
n <- 1000  # Number of simulations

# Base FCFFs from FY23 to FY28 (in ₹ Crores)
base_fcff <- c(-958, -807, -150, 386, 986, 1547)
years <- 1:6

# Generate random variables
growth_factors <- matrix(runif(n * 6, 0.9, 1.1), nrow = n)  # 90%–110% of FCFF
wacc <- runif(n, 0.08, 0.12)  # WACC between 8% and 12%
terminal_growth <- runif(n, 0.03, 0.07)  # Terminal growth rate between 3%–7%

# Step 3: Simulate valuations
valuations <- numeric(n)
for (i in 1:n) {
  fcff_sim <- base_fcff * growth_factors[i, ]
  discount_factors <- 1 / ((1 + wacc[i]) ^ years)
  pv_fcff <- sum(fcff_sim * discount_factors)

  # Terminal value using Gordon Growth Model
  terminal_value <- base_fcff[6] * growth_factors[i, 6] * (1 + terminal_growth[i]) / (wacc[i] - terminal_growth[i])
  pv_terminal <- terminal_value / ((1 + wacc[i]) ^ 6)
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  valuations[i] <- pv_fcff + pv_terminal
}

# Step 4: Convert to DataFrame
df <- data.frame(Valuation_Cr = valuations)

# Step 5: Summary
summary(df)

# Step 6: Histogram Plot
ggplot(df, aes(x = Valuation_Cr)) +
  geom_histogram(fill = "skyblue", bins = 50, color = "black") +
  geom_vline(aes(xintercept = median(Valuation_Cr)), color = "red", linetype = "dashed", size = 1) +
  labs(
    title = "Monte Carlo Simulation: Zepto DCF Valuation",
    x = "Enterprise Value (₹ Cr)",
    y = "Frequency"
  ) +
  theme_minimal()
ggplot(df, aes(x = Valuation_Cr)) +
  stat_ecdf(geom = "step", color = "blue") +
  geom_vline(xintercept = 14000, linetype = "dashed", color = "red") +
  labs(title = "CDF: Probability Zepto's Valuation ≥ X", x = "Valuation (Cr ₹)", y = "Cumulative Probability") +
  theme_minimal()
ggplot(df, aes(y = Valuation_Cr)) +
  geom_boxplot(fill = "lightblue") +
  labs(title = "Boxplot of Simulated Zepto Valuations", y = "Enterprise Value (Cr ₹)") +
  theme_minimal()
```

```
quantile(df$Valuation_Cr, probs = c(0.05, 0.25, 0.5,0.75,0.95))
ggplot(df, aes(x = Valuation_Cr)) +
  stat_ecdf(geom = "step", color = "darkblue", size = 1) +
  geom_vline(xintercept = 14000, color = "red", linetype = "dashed") +
  labs(title = "Cumulative Distribution of Valuation",
       subtitle = "Probability of Zepto's Valuation Exceeding ₹X",
       x = "Enterprise Value (Cr ₹)",
       y = "Cumulative Probability") +
  theme_minimal()
 wacc_vals <- seq(0.08, 0.12, 0.01)
growth_vals <- seq(0.03, 0.07, 0.01)

sensitivity <- expand.grid(WACC = wacc_vals, TG = growth_vals)
sensitivity$Valuation <- mapply(function(w, g) {
  tv <- 1547 * (1 + g) / (w - g)
  pv_tv <- tv / ((1 + w)^6)
  pv_fcff <- sum(base_fcff / ((1 + w)^years))
  return(pv_fcff + pv_tv)
}, sensitivity$WACC, sensitivity$TG)

ggplot(sensitivity, aes(x = WACC, y = TG, fill = Valuation)) +
  geom_tile() +
  scale_fill_gradient(low = "lightblue", high = "darkgreen") +
  labs(title = "Sensitivity of Valuation to WACC and Terminal Growth",
       x = "WACC", y = "Terminal Growth Rate", fill = "Valuation (Cr ₹)") +
  theme_minimal()
 write.csv(df, "Zepto_MonteCarlo_Results.csv", row.names = FALSE)
 ggplot(df, aes(x = "Zepto", y = Valuation_Cr)) +
  geom_violin(fill = "lightgreen") +
  labs(
    title = "Violin Plot: Valuation Distribution Shape",
```

```
    x = "",
    y = "Valuation (Cr ₹)"
  ) +
  theme_minimal()
ggplot(df, aes(x = "", y = Valuation_Cr)) +
  geom_violin(fill = "lightgreen") +
  labs(title = "Violin Plot: Valuation Distribution Shape", y = "Valuation (Cr ₹)", x = "") +
  theme_minimal()
ggplot(df, aes(x = "", y = Valuation_Cr)) +
  geom_boxplot(fill = "lightblue") +
  labs(title = "Boxplot of Simulated Zepto Valuations", y = "Enterprise Value (Cr ₹)", x = "") +
  theme_minimal()
write.csv(df, "Zepto_MonteCarlo_Results.csv", row.names=FALSE)
```