

EASY_SOL

DISHA

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0.1 Step 1: Install & Load Packages

```
library(data.table)
library(ggplot2)
library(reshape2)
```

```
##
## Attaching package: 'reshape2'

## The following objects are masked from 'package:data.table':
##
##      dcast, melt
```

0.2 Step 2: Create & Merge Data Tables

```
students <- data.table(student_id = c(1, 2, 3, 4, 5),
                        name = c("Alice", "Bob", "Charlie", "David", "Eva"),
                        age = c(20, 21, 19, 22, 20))

exam_scores <- data.table(student_id = c(2, 3, 5, 6),
                           math_score = c(85, 90, 78, 88),
                           science_score = c(80, 85, 75, 89))

# Full Outer Join
gg <- merge(students, exam_scores, by = "student_id", all = TRUE)
print("Merged Data:")
```

```
## [1] "Merged Data:"
```

```
print(gg)
```

```
## Key: <student_id>
##   student_id  name  age math_score science_score
##      <num>  <char> <num>      <num>      <num>
## 1:         1  Alice   20         NA         NA
## 2:         2   Bob   21         85         80
## 3:         3 Charlie  19         90         85
## 4:         4  David  22         NA         NA
## 5:         5   Eva   20         78         75
## 6:         6   <NA>   NA         88         89
```

0.3 Step 3: Handle Missing Values

```
gg[is.na(math_score), math_score := 0]
gg[is.na(science_score), science_score := 0]
```

0.4 Step 4: Reshape Data for Visualization

```
long_data <- melt(gg, id.vars = c("student_id", "name"),
                  measure.vars = c("math_score", "science_score"),
                  variable.name = "Subject", value.name = "Score")
```

0.5 Step 5: Plot Student Scores

```
ggplot(long_data, aes(x = factor(student_id), y = Score, fill = Subject)) +
  geom_bar(stat = "identity", position = position_dodge(width = 0.7)) +
  geom_text(aes(label = Score), vjust = -0.5, position = position_dodge(width = 0.7)) +
  labs(title = "Student Exam Scores", x = "Student ID", y = "Score") +
  scale_fill_manual(values = c("math_score" = "blue", "science_score" = "red"),
                    labels = c("Math Score", "Science Score")) +
  theme_minimal()
```

