

List-Operations.R

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```
# Create a list named employee representing the details of an employee with the following components:
# EmployeeID: A unique employee identifier (as a numeric value).
# Name: The employee's full name (as a string).
# Salary: The employee's monthly salary (as a numeric value).
# Departments: A vector containing the names of the departments the employee is associated with (as strings).
# Display the entire content of the employee list.
employee<-list(01,"Anita",500,c("Marketing","Management","Sales","Devolpement"))
employee
```

```
## [[1]]
## [1] 1
##
## [[2]]
## [1] "Anita"
##
## [[3]]
## [1] 500
##
## [[4]]
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
names(employee)=c("EmployeeID","Name","Salary","Departments")
employee
```

```
## $EmployeeID
## [1] 1
##
## $Name
## [1] "Anita"
##
## $Salary
## [1] 500
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
#Calculate and print the employee's annual salary (12 times the monthly salary).
annual_salary<-employee$Salary*12
annual_salary
```

```
## [1] 6000
```

```
#Update the employee's name to a different name.
employee[2]="Rose"
employee
```

```
## $EmployeeID
## [1] 1
##
## $Name
## [1] "Rose"
##
## $Salary
## [1] 500
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
#Add a new department to the Departments vector for the employee.
employee$Departments<-c(employee$Departments,"IT")
employee
```

```
## $EmployeeID
## [1] 1
##
## $Name
## [1] "Rose"
##
## $Salary
## [1] 500
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement" "IT"
```

```
#Create a list named organization to represent an organization with the following components:
#Name: The name of the organization (as a string).
#Employees: A list containing details of at least three employees, using the structure created in Task 1
emp1<-list("EmployeeID"= 01,"Name"="Anita","Salary"=500,"Departments"=c("Marketing","Management","Sales","Devolpement"))
emp2<-list("EmployeeID"= 02,"Name"="Rose","Salary"=600,"Departments"=c("Marketing","Management","Devolpement"))
emp3<-list("EmployeeID"= 03,"Name"="Tincy","Salary"=800,"Departments"=c("Marketing","Management","Sales","Devolpement"))

#Display the entire content of the nested list organization.
organization<-list(Name="AXC","Employees"=list(emp1,emp2,emp3))
organization
```

```
## $Name
## [1] "AXC"
##
## $Employees
## $Employees[[1]]
## $Employees[[1]]$EmployeeID
## [1] 1
##
## $Employees[[1]]$Name
## [1] "Anita"
##
## $Employees[[1]]$Salary
## [1] 500
##
## $Employees[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Employees[[2]]
## $Employees[[2]]$EmployeeID
## [1] 2
##
## $Employees[[2]]$Name
## [1] "Rose"
##
## $Employees[[2]]$Salary
## [1] 600
##
## $Employees[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Employees[[3]]
## $Employees[[3]]$EmployeeID
## [1] 3
##
## $Employees[[3]]$Name
## [1] "Tincy"
##
## $Employees[[3]]$Salary
## [1] 800
##
## $Employees[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
#Access and print the annual salary of the second employee in the organization.
print(organization$Employees[[2]]$Salary*12)
```

```
## [1] 7200
```

```
#Access and print the name of the organization.  
print(organization$Name)
```

```
## [1] "AXC"
```

```
#Create a new List named department_employees that groups employees by department. Each department should have a list of employees associated with it.  
department_employees <- list()  
for(emp in organization$Employees)  
{  
  dept=emp$Departments  
  for(d in dept)  
  {  
    if(is.null(department_employees[[d]]))  
    { department_employees[[d]]=list(emp)}  
    else  
    { department_employees[[d]]=c(department_employees[[d]],list(emp))}  
  }  
}  
department_employees
```

```
## $Marketing
## $Marketing[[1]]
## $Marketing[[1]]$EmployeeID
## [1] 1
##
## $Marketing[[1]]$Name
## [1] "Anita"
##
## $Marketing[[1]]$Salary
## [1] 500
##
## $Marketing[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Marketing[[2]]
## $Marketing[[2]]$EmployeeID
## [1] 2
##
## $Marketing[[2]]$Name
## [1] "Rose"
##
## $Marketing[[2]]$Salary
## [1] 600
##
## $Marketing[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Marketing[[3]]
## $Marketing[[3]]$EmployeeID
## [1] 3
##
## $Marketing[[3]]$Name
## [1] "Tincy"
##
## $Marketing[[3]]$Salary
## [1] 800
##
## $Marketing[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Management
## $Management[[1]]
## $Management[[1]]$EmployeeID
## [1] 1
##
## $Management[[1]]$Name
## [1] "Anita"
```

```
##
## $Management[[1]]$Salary
## [1] 500
##
## $Management[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Management[[2]]
## $Management[[2]]$EmployeeID
## [1] 2
##
## $Management[[2]]$Name
## [1] "Rose"
##
## $Management[[2]]$Salary
## [1] 600
##
## $Management[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Management[[3]]
## $Management[[3]]$EmployeeID
## [1] 3
##
## $Management[[3]]$Name
## [1] "Tincy"
##
## $Management[[3]]$Salary
## [1] 800
##
## $Management[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
##
## $Sales
## $Sales[[1]]
## $Sales[[1]]$EmployeeID
## [1] 1
##
## $Sales[[1]]$Name
## [1] "Anita"
##
## $Sales[[1]]$Salary
## [1] 500
##
## $Sales[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
```

```
##
## $Sales[[2]]
## $Sales[[2]]$EmployeeID
## [1] 3
##
## $Sales[[2]]$Name
## [1] "Tincy"
##
## $Sales[[2]]$Salary
## [1] 800
##
## $Sales[[2]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
##
## $Devolpement
## $Devolpement[[1]]
## $Devolpement[[1]]$EmployeeID
## [1] 1
##
## $Devolpement[[1]]$Name
## [1] "Anita"
##
## $Devolpement[[1]]$Salary
## [1] 500
##
## $Devolpement[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Devolpement[[2]]
## $Devolpement[[2]]$EmployeeID
## [1] 2
##
## $Devolpement[[2]]$Name
## [1] "Rose"
##
## $Devolpement[[2]]$Salary
## [1] 600
##
## $Devolpement[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Devolpement[[3]]
## $Devolpement[[3]]$EmployeeID
## [1] 3
##
## $Devolpement[[3]]$Name
## [1] "Tincy"
```



```
##
## $Devolpement[[3]]$Salary
## [1] 800
##
## $Devolpement[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

#Print each list created in the script to show the structure and content of the lists after performing the operations in Tasks 1-5.

```
print("Structure and content of employee")
```

```
## [1] "Structure and content of employee"
```

```
str(employee)
```

```
## List of 4
## $ EmployeeID : num 1
## $ Name       : chr "Rose"
## $ Salary     : num 500
## $ Departments: chr [1:5] "Marketing" "Management" "Sales" "Devolpement" ...
```

```
print(employee)
```

```
## $EmployeeID
## [1] 1
##
## $Name
## [1] "Rose"
##
## $Salary
## [1] 500
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement" "IT"
```

```
print("Structure and content of emp1")
```

```
## [1] "Structure and content of emp1"
```

```
str(emp1)
```

```
## List of 4
## $ EmployeeID : num 1
## $ Name       : chr "Anita"
## $ Salary      : num 500
## $ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
```

```
print(emp1)
```

```
## $EmployeeID
## [1] 1
##
## $Name
## [1] "Anita"
##
## $Salary
## [1] 500
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
print("Structure and content of emp2")
```

```
## [1] "Structure and content of emp2"
```

```
str(emp2)
```

```
## List of 4
## $ EmployeeID : num 2
## $ Name       : chr "Rose"
## $ Salary      : num 600
## $ Departments: chr [1:3] "Marketing" "Management" "Devolpement"
```

```
print(emp2)
```

```
## $EmployeeID
## [1] 2
##
## $Name
## [1] "Rose"
##
## $Salary
## [1] 600
##
## $Departments
## [1] "Marketing" "Management" "Devolpement"
```

```
print("Structure and content of emp3")
```

```
## [1] "Structure and content of emp3"
```

```
str(emp3)
```

```
## List of 4
## $ EmployeeID : num 3
## $ Name       : chr "Tincy"
## $ Salary     : num 800
## $ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
```

```
print(emp3)
```

```
## $EmployeeID
## [1] 3
##
## $Name
## [1] "Tincy"
##
## $Salary
## [1] 800
##
## $Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
print("Structure and content of organization")
```

```
## [1] "Structure and content of organization"
```

```
str(organization)
```

```
## List of 2
## $ Name      : chr "AXC"
## $ Employees:List of 3
## ..$ :List of 4
## .. ..$ EmployeeID : num 1
## .. ..$ Name       : chr "Anita"
## .. ..$ Salary     : num 500
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 2
## .. ..$ Name       : chr "Rose"
## .. ..$ Salary     : num 600
## .. ..$ Departments: chr [1:3] "Marketing" "Management" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 3
## .. ..$ Name       : chr "Tincy"
## .. ..$ Salary     : num 800
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
```

```
print(organization)
```

```
## $Name
## [1] "AXC"
##
## $Employees
## $Employees[[1]]
## $Employees[[1]]$EmployeeID
## [1] 1
##
## $Employees[[1]]$Name
## [1] "Anita"
##
## $Employees[[1]]$Salary
## [1] 500
##
## $Employees[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Employees[[2]]
## $Employees[[2]]$EmployeeID
## [1] 2
##
## $Employees[[2]]$Name
## [1] "Rose"
##
## $Employees[[2]]$Salary
## [1] 600
##
## $Employees[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Employees[[3]]
## $Employees[[3]]$EmployeeID
## [1] 3
##
## $Employees[[3]]$Name
## [1] "Tincy"
##
## $Employees[[3]]$Salary
## [1] 800
##
## $Employees[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
```

```
#Also, print the department_employees list to demonstrate how employees are grouped by depart
ment.
print("Structure and content of department_employees")
```

```
## [1] "Structure and content of department_employees"
```

```
str(department_employees)
```

```
## List of 4
## $ Marketing :List of 3
## ..$ :List of 4
## .. ..$ EmployeeID : num 1
## .. ..$ Name       : chr "Anita"
## .. ..$ Salary     : num 500
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 2
## .. ..$ Name       : chr "Rose"
## .. ..$ Salary     : num 600
## .. ..$ Departments: chr [1:3] "Marketing" "Management" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 3
## .. ..$ Name       : chr "Tincy"
## .. ..$ Salary     : num 800
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## $ Management :List of 3
## ..$ :List of 4
## .. ..$ EmployeeID : num 1
## .. ..$ Name       : chr "Anita"
## .. ..$ Salary     : num 500
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 2
## .. ..$ Name       : chr "Rose"
## .. ..$ Salary     : num 600
## .. ..$ Departments: chr [1:3] "Marketing" "Management" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 3
## .. ..$ Name       : chr "Tincy"
## .. ..$ Salary     : num 800
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## $ Sales      :List of 2
## ..$ :List of 4
## .. ..$ EmployeeID : num 1
## .. ..$ Name       : chr "Anita"
## .. ..$ Salary     : num 500
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 3
## .. ..$ Name       : chr "Tincy"
## .. ..$ Salary     : num 800
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## $ Devolpement:List of 3
## ..$ :List of 4
## .. ..$ EmployeeID : num 1
## .. ..$ Name       : chr "Anita"
## .. ..$ Salary     : num 500
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
## ..$ :List of 4
```

```
## .. ..$ EmployeeID : num 2
## .. ..$ Name       : chr "Rose"
## .. ..$ Salary      : num 600
## .. ..$ Departments: chr [1:3] "Marketing" "Management" "Devolpement"
## ..$ :List of 4
## .. ..$ EmployeeID : num 3
## .. ..$ Name       : chr "Tincy"
## .. ..$ Salary      : num 800
## .. ..$ Departments: chr [1:4] "Marketing" "Management" "Sales" "Devolpement"
```

```
print(department_employees)
```



```
## $Marketing
## $Marketing[[1]]
## $Marketing[[1]]$EmployeeID
## [1] 1
##
## $Marketing[[1]]$Name
## [1] "Anita"
##
## $Marketing[[1]]$Salary
## [1] 500
##
## $Marketing[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Marketing[[2]]
## $Marketing[[2]]$EmployeeID
## [1] 2
##
## $Marketing[[2]]$Name
## [1] "Rose"
##
## $Marketing[[2]]$Salary
## [1] 600
##
## $Marketing[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Marketing[[3]]
## $Marketing[[3]]$EmployeeID
## [1] 3
##
## $Marketing[[3]]$Name
## [1] "Tincy"
##
## $Marketing[[3]]$Salary
## [1] 800
##
## $Marketing[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Management
## $Management[[1]]
## $Management[[1]]$EmployeeID
## [1] 1
##
## $Management[[1]]$Name
## [1] "Anita"
```

```
##
## $Management[[1]]$Salary
## [1] 500
##
## $Management[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Management[[2]]
## $Management[[2]]$EmployeeID
## [1] 2
##
## $Management[[2]]$Name
## [1] "Rose"
##
## $Management[[2]]$Salary
## [1] 600
##
## $Management[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Management[[3]]
## $Management[[3]]$EmployeeID
## [1] 3
##
## $Management[[3]]$Name
## [1] "Tincy"
##
## $Management[[3]]$Salary
## [1] 800
##
## $Management[[3]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
##
## $Sales
## $Sales[[1]]
## $Sales[[1]]$EmployeeID
## [1] 1
##
## $Sales[[1]]$Name
## [1] "Anita"
##
## $Sales[[1]]$Salary
## [1] 500
##
## $Sales[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
```

```
##
## $Sales[[2]]
## $Sales[[2]]$EmployeeID
## [1] 3
##
## $Sales[[2]]$Name
## [1] "Tincy"
##
## $Sales[[2]]$Salary
## [1] 800
##
## $Sales[[2]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
##
## $Devolpement
## $Devolpement[[1]]
## $Devolpement[[1]]$EmployeeID
## [1] 1
##
## $Devolpement[[1]]$Name
## [1] "Anita"
##
## $Devolpement[[1]]$Salary
## [1] 500
##
## $Devolpement[[1]]$Departments
## [1] "Marketing" "Management" "Sales" "Devolpement"
##
##
## $Devolpement[[2]]
## $Devolpement[[2]]$EmployeeID
## [1] 2
##
## $Devolpement[[2]]$Name
## [1] "Rose"
##
## $Devolpement[[2]]$Salary
## [1] 600
##
## $Devolpement[[2]]$Departments
## [1] "Marketing" "Management" "Devolpement"
##
##
## $Devolpement[[3]]
## $Devolpement[[3]]$EmployeeID
## [1] 3
##
## $Devolpement[[3]]$Name
## [1] "Tincy"
```

```
##  
## $Devolpement[[3]]$Salary  
## [1] 800  
##  
## $Devolpement[[3]]$Departments  
## [1] "Marketing" "Management" "Sales" "Devolpement"
```