

Stack Overflow Developers Survey: Data for Greek Developers

The two datasets that I use originate from the “Stack Overflow” website. These two datasets are the result of the yearly survey conducted by the company, regarding developers all around the world. (<https://insights.stackoverflow.com/survey/2021>). I used the dataset from 2021. More information regarding the datasets can be found online.

Insert the library “tidyverse” and our datasets.

```
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.6      v purrr   0.3.4
## v tibble  3.1.7      v dplyr   1.0.9
## v tidyr   1.2.0      v stringr 1.4.0
## v readr   2.1.2      v forcats 0.5.1
```

```
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
```

```
survey <- read.csv("survey_results_public.csv")
schema <- read.csv("survey_results_schema.csv")
```

View the datasets, check dimensions and column names.

```
dim(survey)
```

```
## [1] 83439    48
```

```
head(survey)
```

```
##   ResponseId
## 1           1
## 2           2
## 3           3
## 4           4
## 5           5
## 6           6
##                                     MainBranch
## 1                                     I am a developer by profession
## 2                                     I am a student who is learning to code
## 3 I am not primarily a developer, but I write code sometimes as part of my work
## 4                                     I am a developer by profession
```

```

## 5 I am a developer by profession
## 6 I am a student who is learning to code
## Employment
## 1 Independent contractor, freelancer, or self-employed
## 2 Student, full-time
## 3 Student, full-time
## 4 Employed full-time
## 5 Independent contractor, freelancer, or self-employed
## 6 Student, part-time
## Country US_State UK_Country
## 1 Slovakia <NA> <NA>
## 2 Netherlands <NA> <NA>
## 3 Russian Federation <NA> <NA>
## 4 Austria <NA> <NA>
## 5 United Kingdom of Great Britain and Northern Ireland <NA> England
## 6 United States of America Georgia <NA>
## EdLevel
## 1 Secondary school (e.g. American high school, German Realschule or Gymnasium, etc.)
## 2 Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 3 Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 4 Master's degree (M.A., M.S., M.Eng., MBA, etc.)
## 5 Master's degree (M.A., M.S., M.Eng., MBA, etc.)
## 6 Bachelor's degree (B.A., B.S., B.Eng., etc.)
## Age1stCode
## 1 18 - 24 years
## 2 11 - 17 years
## 3 11 - 17 years
## 4 11 - 17 years
## 5 5 - 10 years
## 6 11 - 17 years
## LearnCode
## 1 Coding Bootcamp;Other online resources (ex: videos, blogs, etc)
## 2 Other online resources (ex: videos, blogs, etc);School
## 3 Other online resources (ex: videos, blogs, etc);Online Forum
## 4 <NA>
## 5 Friend or family member
## 6 Other online resources (ex: videos, blogs, etc);Online Courses or Certification
## YearsCode YearsCodePro
## 1 <NA> <NA>
## 2 7 <NA>
## 3 <NA> <NA>
## 4 <NA> <NA>
## 5 17 10
## 6 <NA> <NA>
##
## 1 Developer
## 2
## 3
## 4 Developer, f
## 5 Developer, desktop or enterprise applications;Developer, full-stack;Engineer, data;Other (please sp
## 6
## OrgSize Currency
## 1 20 to 99 employees EUR European Euro
## 2 <NA> <NA>

```

```

## 3                                     <NA>                                     <NA>
## 4                                100 to 499 employees    EUR European Euro
## 5 Just me - I am a freelancer, sole proprietor, etc. GBP\tPound sterling
## 6                                     <NA>                                     <NA>
##   CompTotal CompFreq
## 1       4800  Monthly
## 2         NA    <NA>
## 3         NA    <NA>
## 4         NA  Monthly
## 5         NA    <NA>
## 6         NA    <NA>
##
##                                     LanguageHaveWorkedWith
## 1                                C++;HTML/CSS;JavaScript;Objective-C;PHP;Swift
## 2                                     JavaScript;Python
## 3                                     Assembly;C;Python;R;Rust
## 4                                     JavaScript;TypeScript
## 5                                Bash/Shell;HTML/CSS;Python;SQL
## 6 C;C++;C++;HTML/CSS;Java;JavaScript;Node.js;PowerShell;Python;SQL;Swift
##                                     LanguageWantToWorkWith
## 1                                     Swift
## 2                                     <NA>
## 3                                     Julia;Python;Rust
## 4                                     JavaScript;TypeScript
## 5                                Bash/Shell;HTML/CSS;Python;SQL
## 6 C#;C++;Go;HTML/CSS;Java;JavaScript;Node.js;Objective-C;Perl;Python;SQL;Swift
##           DatabaseHaveWorkedWith
## 1           PostgreSQL;SQLite
## 2           PostgreSQL
## 3           SQLite
## 4           <NA>
## 5 Elasticsearch;PostgreSQL;Redis
## 6           MySQL;PostgreSQL;SQLite
##
##                                     DatabaseWantToWorkWith
## 1                                     SQLite
## 2                                     <NA>
## 3                                     SQLite
## 4                                     <NA>
## 5                                Cassandra;Elasticsearch;PostgreSQL;Redis
## 6 Elasticsearch;Firebase;IBM DB2;MariaDB;Microsoft SQL Server;MySQL;PostgreSQL;SQLite
##   PlatformHaveWorkedWith PlatformWantToWorkWith   WebframeHaveWorkedWith
## 1                   <NA>                   <NA>           Laravel;Symfony
## 2                   <NA>                   <NA>           Angular;Flask;Vue.js
## 3                   Heroku                   <NA>           Flask
## 4                   <NA>                   <NA>           Angular;jQuery
## 5                   <NA>                   <NA>           Flask
## 6                   <NA>                   <NA> Express;Flask;jQuery;React.js
##           WebframeWantToWorkWith           MiscTechHaveWorkedWith
## 1                   <NA>                   <NA>
## 2                   <NA>                   Cordova
## 3                   Flask           NumPy;Pandas;TensorFlow;Torch/PyTorch
## 4           Angular;jQuery                   <NA>
## 5                   Flask           Apache Spark;Hadoop;NumPy;Pandas
## 6 Express;Flask;jQuery;React.js Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
##                                     MiscTechWantToWorkWith

```

```

## 1                                     <NA>
## 2                                     <NA>
## 3      Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 4                                     <NA>
## 5                                     Hadoop;NumPy;Pandas
## 6 Keras;NumPy;Pandas;Qt;React Native;TensorFlow;Torch/PyTorch
##      ToolsTechHaveWorkedWith      ToolsTechWantToWorkWith
## 1                                     <NA>      <NA>
## 2      Docker;Git;Yarn      Git
## 3      <NA>      <NA>
## 4      <NA>      <NA>
## 5 Docker;Git;Kubernetes;Yarn      Docker;Git;Kubernetes;Yarn
## 6      Git Docker;Git;Unity 3D;Unreal Engine
##                                     NEWCollabToolsHaveWorkedWith
## 1                                     PHPStorm;Xcode
## 2      Android Studio;IntelliJ;Notepad++;PyCharm
## 3      IPython/Jupyter;PyCharm;RStudio;Sublime Text;Visual Studio Code
## 4      <NA>
## 5      Atom;IPython/Jupyter;Notepad++;PyCharm;Vim
## 6 IPython/Jupyter;Notepad++;PyCharm;Sublime Text;Vim;Visual Studio;Visual Studio Code;Xcode
##                                     NEWCollabToolsWantToWorkWith
## 1      Atom;Xcode
## 2      <NA>
## 3      IPython/Jupyter;RStudio;Sublime Text;Visual Studio Code
## 4      <NA>
## 5      Atom;IPython/Jupyter;Notepad++;PyCharm;Vim;Visual Studio Code
## 6 Android Studio;IPython/Jupyter;Vim;Visual Studio;Visual Studio Code;Xcode
##      OpSys
## 1      MacOS
## 2      Windows
## 3      MacOS
## 4      Windows
## 5 Linux-based
## 6      Windows
##
## 1      Call a coworker or friend;Visit Stack Over
## 2
## 3      Visit Stack Overflow;Google it;Watch
## 4      Call a coworker or friend;Visit Stack Over
## 5      Visit Stack Overflow;Go for a walk or other physical activity;Google it;Watch
## 6 Visit Stack Overflow;Go for a walk or other physical activity;Google it;Watch help / tutorial video
##      NEWSOSites      SOVisitFreq SOAccount
## 1      Stack Overflow Multiple times per day      Yes
## 2      Stack Overflow Daily or almost daily      Yes
## 3 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 4      Stack Overflow Daily or almost daily      Yes
## 5 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 6 Stack Overflow;Stack Exchange Multiple times per day      Yes
##      SOPartFreq      SOComm
## 1      A few times per month or weekly Yes, definitely
## 2      Daily or almost daily Yes, definitely
## 3      Multiple times per day Yes, definitely
## 4      Daily or almost daily      Neutral
## 5      A few times per week      Yes, somewhat

```

```
## 6 I have never participated in Q&A on Stack Overflow Yes, somewhat
## NEWOtherComms Age Gender Trans Sexuality
## 1 No 25-34 years old Man No Straight / Heterosexual
## 2 No 18-24 years old Man No Straight / Heterosexual
## 3 Yes 18-24 years old Man No Prefer not to say
## 4 No 35-44 years old Man No Straight / Heterosexual
## 5 No 25-34 years old Man No <NA>
## 6 No 18-24 years old Prefer not to say No Straight / Heterosexual
## Ethnicity Accessibility
## 1 White or of European descent None of the above
## 2 White or of European descent None of the above
## 3 Prefer not to say None of the above
## 4 White or of European descent I am deaf / hard of hearing
## 5 White or of European descent None of the above
## 6 Prefer not to say None of the above
## MentalHealth
## 1 None of the above
## 2 None of the above
## 3 None of the above
## 4 <NA>
## 5 <NA>
## 6 I have a concentration and/or memory disorder (e.g. ADHD)
## SurveyLength SurveyEase ConvertedCompYearly
## 1 Appropriate in length Easy 62268
## 2 Appropriate in length Easy NA
## 3 Appropriate in length Easy NA
## 4 Appropriate in length Neither easy nor difficult NA
## 5 Appropriate in length Easy NA
## 6 Too long Neither easy nor difficult NA
```

```
head(survey)
```

```
## ResponseId
## 1 1
## 2 2
## 3 3
## 4 4
## 5 5
## 6 6
## MainBranch
## 1 I am a developer by profession
## 2 I am a student who is learning to code
## 3 I am not primarily a developer, but I write code sometimes as part of my work
## 4 I am a developer by profession
## 5 I am a developer by profession
## 6 I am a student who is learning to code
## Employment
## 1 Independent contractor, freelancer, or self-employed
## 2 Student, full-time
## 3 Student, full-time
## 4 Employed full-time
## 5 Independent contractor, freelancer, or self-employed
## 6 Student, part-time
## Country US_State UK_Country
```

## 1	Slovakia	<NA>	<NA>
## 2	Netherlands	<NA>	<NA>
## 3	Russian Federation	<NA>	<NA>
## 4	Austria	<NA>	<NA>
## 5	United Kingdom of Great Britain and Northern Ireland	<NA>	England
## 6	United States of America	Georgia	<NA>

EdLevel

## 1	Secondary school (e.g. American high school, German Realschule or Gymnasium, etc.)
## 2	Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 3	Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 4	Master's degree (M.A., M.S., M.Eng., MBA, etc.)
## 5	Master's degree (M.A., M.S., M.Eng., MBA, etc.)
## 6	Bachelor's degree (B.A., B.S., B.Eng., etc.)

Age1stCode

## 1	18 - 24 years
## 2	11 - 17 years
## 3	11 - 17 years
## 4	11 - 17 years
## 5	5 - 10 years
## 6	11 - 17 years

LearnCode

## 1	Coding Bootcamp;Other online resources (ex: videos, blogs, etc)
## 2	Other online resources (ex: videos, blogs, etc);School
## 3	Other online resources (ex: videos, blogs, etc);Online Forum
## 4	<NA>
## 5	Friend or family member
## 6	Other online resources (ex: videos, blogs, etc);Online Courses or Certification

YearsCode YearsCodePro

## 1	<NA>	<NA>
## 2	7	<NA>
## 3	<NA>	<NA>
## 4	<NA>	<NA>
## 5	17	10
## 6	<NA>	<NA>

Developer

## 1	
## 2	
## 3	
## 4	Developer, f
## 5	Developer, desktop or enterprise applications;Developer, full-stack;Engineer, data;Other (please s
## 6	

OrgSize Currency

## 1	20 to 99 employees	EUR European Euro
## 2	<NA>	<NA>
## 3	<NA>	<NA>
## 4	100 to 499 employees	EUR European Euro
## 5	Just me - I am a freelancer, sole proprietor, etc.	GBP\tpound sterling
## 6	<NA>	<NA>

CompTotal CompFreq

## 1	4800	Monthly
## 2	NA	<NA>
## 3	NA	<NA>
## 4	NA	Monthly
## 5	NA	<NA>

```

## 6      NA      <NA>
##
##                                     LanguageHaveWorkedWith
## 1                                     C++;HTML/CSS;JavaScript;Objective-C;PHP;Swift
## 2                                     JavaScript;Python
## 3                                     Assembly;C;Python;R;Rust
## 4                                     JavaScript;TypeScript
## 5                                     Bash/Shell;HTML/CSS;Python;SQL
## 6 C#;C++;HTML/CSS;Java;JavaScript;Node.js;PowerShell;Python;SQL;Swift
##                                     LanguageWantToWorkWith
## 1                                     Swift
## 2                                     <NA>
## 3                                     Julia;Python;Rust
## 4                                     JavaScript;TypeScript
## 5                                     Bash/Shell;HTML/CSS;Python;SQL
## 6 C#;C++;Go;HTML/CSS;Java;JavaScript;Node.js;Objective-C;Perl;Python;SQL;Swift
##      DatabaseHaveWorkedWith
## 1      PostgreSQL;SQLite
## 2      PostgreSQL
## 3      SQLite
## 4      <NA>
## 5 Elasticsearch;PostgreSQL;Redis
## 6      MySQL;PostgreSQL;SQLite
##
##                                     DatabaseWantToWorkWith
## 1                                     SQLite
## 2                                     <NA>
## 3                                     SQLite
## 4                                     <NA>
## 5                                     Cassandra;Elasticsearch;PostgreSQL;Redis
## 6 Elasticsearch;Firebase;IBM DB2;MariaDB;Microsoft SQL Server;MySQL;PostgreSQL;SQLite
## PlatformHaveWorkedWith PlatformWantToWorkWith WebframeHaveWorkedWith
## 1      <NA>      <NA>      Laravel;Symfony
## 2      <NA>      <NA>      Angular;Flask;Vue.js
## 3      Heroku      <NA>      Flask
## 4      <NA>      <NA>      Angular;jQuery
## 5      <NA>      <NA>      Flask
## 6      <NA>      <NA> Express;Flask;jQuery;React.js
##      WebframeWantToWorkWith      MiscTechHaveWorkedWith
## 1      <NA>      <NA>
## 2      <NA>      Cordova
## 3      Flask      NumPy;Pandas;TensorFlow;Torch/PyTorch
## 4      Angular;jQuery      <NA>
## 5      Flask      Apache Spark;Hadoop;NumPy;Pandas
## 6 Express;Flask;jQuery;React.js Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
##      MiscTechWantToWorkWith
## 1      <NA>
## 2      <NA>
## 3      Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 4      <NA>
## 5      Hadoop;NumPy;Pandas
## 6 Keras;NumPy;Pandas;Qt;React Native;TensorFlow;Torch/PyTorch
##      ToolsTechHaveWorkedWith      ToolsTechWantToWorkWith
## 1      <NA>      <NA>
## 2      Docker;Git;Yarn      Git
## 3      <NA>      <NA>

```

```

## 4          <NA>          <NA>
## 5 Docker;Git;Kubernetes;Yarn      Docker;Git;Kubernetes;Yarn
## 6          Git Docker;Git;Unity 3D;Unreal Engine
##          NEWCollabToolsHaveWorkedWith
## 1          PHPStorm;Xcode
## 2          Android Studio;IntelliJ;Notepad++;PyCharm
## 3          IPython/Jupyter;PyCharm;RStudio;Sublime Text;Visual Studio Code
## 4          <NA>
## 5          Atom;IPython/Jupyter;Notepad++;PyCharm;Vim
## 6 IPython/Jupyter;Notepad++;PyCharm;Sublime Text;Vim;Visual Studio;Visual Studio Code;Xcode
##          NEWCollabToolsWantToWorkWith
## 1          Atom;Xcode
## 2          <NA>
## 3          IPython/Jupyter;RStudio;Sublime Text;Visual Studio Code
## 4          <NA>
## 5          Atom;IPython/Jupyter;Notepad++;PyCharm;Vim;Visual Studio Code
## 6 Android Studio;IPython/Jupyter;Vim;Visual Studio;Visual Studio Code;Xcode
##      OpSys
## 1      MacOS
## 2      Windows
## 3      MacOS
## 4      Windows
## 5 Linux-based
## 6      Windows
##
## 1          Call a coworker or friend;Visit Stack Over
## 2
## 3          Visit Stack Overflow;Google it;Watch I
## 4          Call a coworker or friend;Visit Stack Over
## 5          Visit Stack Overflow;Go for a walk or other physical activity;Google it;Watch I
## 6 Visit Stack Overflow;Go for a walk or other physical activity;Google it;Watch help / tutorial video
##      NEWSOSites      SOVisitFreq SOAccount
## 1      Stack Overflow Multiple times per day      Yes
## 2      Stack Overflow Daily or almost daily      Yes
## 3 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 4      Stack Overflow Daily or almost daily      Yes
## 5 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 6 Stack Overflow;Stack Exchange Multiple times per day      Yes
##      SOPartFreq      SOComm
## 1      A few times per month or weekly Yes, definitely
## 2      Daily or almost daily Yes, definitely
## 3      Multiple times per day Yes, definitely
## 4      Daily or almost daily      Neutral
## 5      A few times per week      Yes, somewhat
## 6 I have never participated in Q&A on Stack Overflow      Yes, somewhat
##      NEWOtherComms      Age      Gender Trans      Sexuality
## 1      No 25-34 years old      Man      No Straight / Heterosexual
## 2      No 18-24 years old      Man      No Straight / Heterosexual
## 3      Yes 18-24 years old      Man      No      Prefer not to say
## 4      No 35-44 years old      Man      No Straight / Heterosexual
## 5      No 25-34 years old      Man      No      <NA>
## 6      No 18-24 years old Prefer not to say      No Straight / Heterosexual
##      Ethnicity      Accessibility
## 1 White or of European descent      None of the above

```



```
## 2 White or of European descent      None of the above
## 3           Prefer not to say        None of the above
## 4 White or of European descent I am deaf / hard of hearing
## 5 White or of European descent      None of the above
## 6           Prefer not to say        None of the above
##                                     MentalHealth
## 1                                     None of the above
## 2                                     None of the above
## 3                                     None of the above
## 4                                     <NA>
## 5                                     <NA>
## 6 I have a concentration and/or memory disorder (e.g. ADHD)
##           SurveyLength              SurveyEase ConvertedCompYearly
## 1 Appropriate in length              Easy              62268
## 2 Appropriate in length              Easy              NA
## 3 Appropriate in length              Easy              NA
## 4 Appropriate in length Neither easy nor difficult      NA
## 5 Appropriate in length              Easy              NA
## 6           Too long Neither easy nor difficult      NA
```

```
colnames(survey)
```

```
## [1] "ResponseId"      "MainBranch"
## [3] "Employment"      "Country"
## [5] "US_State"        "UK_Country"
## [7] "EdLevel"         "Age1stCode"
## [9] "LearnCode"       "YearsCode"
## [11] "YearsCodePro"    "DevType"
## [13] "OrgSize"         "Currency"
## [15] "CompTotal"       "CompFreq"
## [17] "LanguageHaveWorkedWith" "LanguageWantToWorkWith"
## [19] "DatabaseHaveWorkedWith" "DatabaseWantToWorkWith"
## [21] "PlatformHaveWorkedWith" "PlatformWantToWorkWith"
## [23] "WebframeHaveWorkedWith" "WebframeWantToWorkWith"
## [25] "MiscTechHaveWorkedWith" "MiscTechWantToWorkWith"
## [27] "ToolsTechHaveWorkedWith" "ToolsTechWantToWorkWith"
## [29] "NEWCollabToolsHaveWorkedWith" "NEWCollabToolsWantToWorkWith"
## [31] "OpSys"           "NEWStuck"
## [33] "NEWSOSites"      "SOVisitFreq"
## [35] "SOAccount"       "SOPartFreq"
## [37] "SOComm"          "NEWOtherComms"
## [39] "Age"             "Gender"
## [41] "Trans"           "Sexuality"
## [43] "Ethnicity"       "Accessibility"
## [45] "MentalHealth"    "SurveyLength"
## [47] "SurveyEase"      "ConvertedCompYearly"
```

```
head(schema)
```

```
##      qid      qname
## 1 QID16      S0
## 2 QID12  MetaInfo
## 3 QID1       S1
```

```
## 4 QID2 MainBranch
## 5 QID24 Employment
## 6 QID6 Country
##
## 1 <div><span style="font-size:19px;"><strong>Hello world! </strong></span></div>\n\n<div> </div>\n\n
## 2
## 3
## 4
## 5
## 6
## force_resp type selector
## 1 FALSE DB TB
## 2 FALSE Meta Browser
## 3 FALSE DB TB
## 4 TRUE MC SAVR
## 5 FALSE MC MAVR
## 6 TRUE MC DL
```

In this small case study, I want to take a look at data relevant to greek developers. I will filter out only the developers that live in Greece.

```
greece <- survey%>%
  filter(Country == "Greece")
head(greece)
```

```
## ResponseId
## 1 51
## 2 113
## 3 180
## 4 209
## 5 367
## 6 404
##
## MainBranch
## 1 I am a developer by profession
## 2 I code primarily as a hobby
## 3 I am a developer by profession
## 4 I am a developer by profession
## 5 I am a developer by profession
## 6 I am not primarily a developer, but I write code sometimes as part of my work
## Employment Country US_State UK_Country
## 1 Employed full-time Greece <NA> <NA>
## 2 I prefer not to say Greece <NA> <NA>
## 3 Employed full-time Greece <NA> <NA>
## 4 Employed full-time Greece <NA> <NA>
## 5 Employed full-time Greece <NA> <NA>
## 6 Employed full-time Greece <NA> <NA>
##
## EdLevel Age1stCode
## 1 Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 2 Something else 11 - 17 years
## 3 Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 4 Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 5 Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 6 Other doctoral degree (Ph.D., Ed.D., etc.) 11 - 17 years
```

```

##
## 1
## 2
## 3 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 4 Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Certification
## 5 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 6
## YearsCode YearsCodePro
## 1 12 6
## 2 4 <NA>
## 3 24 18
## 4 9 4
## 5 4 3
## 6 13 9
##
## 1 Developer,
## 2
## 3 Developer, full-stack;System administrator
## 4 Developer, mobile;Developer,
## 5 Developer,
## 6 Developer, mobile;Developer, full-stack;Developer, back-end;Scientist;DevOps specialist;System administrator
## OrgSize Currency CompTotal CompFreq
## 1 20 to 99 employees EUR European Euro 2000 Monthly
## 2 <NA> <NA> NA <NA>
## 3 20 to 99 employees EUR European Euro 2000 Monthly
## 4 2 to 9 employees EUR European Euro 2200 Monthly
## 5 2 to 9 employees EUR European Euro 2000 Monthly
## 6 100 to 499 employees EUR European Euro 42000 Yearly
## LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2 Dart;HTML/CSS;Python
## 3 Java;JavaScript;SQL
## 4 Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 5 HTML/CSS;JavaScript;Node.js;PHP;SQL
## 6 Bash/Shell;C#;HTML/CSS;Java;JavaScript;Kotlin;PowerShell;Python;SQL
## LanguageWantToWorkWith
## 1 HTML/CSS;JavaScript;Node.js;TypeScript
## 2 Java;JavaScript;PHP;SQL
## 3 Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 4 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 5 JavaScript;Node.js;PHP;SQL
## 6 Bash/Shell;HTML/CSS;Java;JavaScript;Kotlin;PowerShell;Python;SQL
## DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2 <NA>
## 3 IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 4 Couchbase;Elasticsearch;MariaDB
## 5 MySQL;Redis;SQLite
## 6 Firebase;Microsoft SQL Server;SQLite
## DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2 <NA>
## 3 MariaDB;Microsoft SQL Server;MySQL;Redis
## 4 Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite

```

```

## 5 MongoDB;MySQL
## 6 Firebase;MariaDB;Microsoft SQL Server;MySQL;Oracle;SQLite
## PlatformHaveWorkedWith PlatformWantToWorkWith
## 1 AWS;DigitalOcean;Microsoft Azure DigitalOcean
## 2 Heroku <NA>
## 3 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 4 <NA> <NA>
## 5 AWS;DigitalOcean AWS;Microsoft Azure
## 6 Microsoft Azure AWS;Google Cloud Platform;Microsoft Azure
## WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2 React.js
## 3 jQuery;Spring
## 4 Express;React.js
## 5 Laravel;React.js;Symfony;Vue.js
## 6 ASP.NET;Flask;jQuery
## WebframeWantToWorkWith MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2 React.js Flutter
## 3 jQuery;React.js;Spring <NA>
## 4 Angular;Express;React.js;Vue.js React Native
## 5 Laravel;React.js;Vue.js <NA>
## 6 Flask;jQuery .NET Framework;NumPy;Pandas
## MiscTechWantToWorkWith ToolsTechHaveWorkedWith ToolsTechWantToWorkWith
## 1 Hadoop;React Native Docker;Kubernetes Docker;Terraform
## 2 Flutter Git <NA>
## 3 <NA> Git Docker;Git;Kubernetes
## 4 Flutter;React Native Docker;Git;Kubernetes;Yarn Docker;Git;Kubernetes;Yarn
## 5 <NA> Git Docker;Git;Kubernetes
## 6 NumPy;Pandas;TensorFlow Git Git;Kubernetes
##
## 1 Notepad
## 2
## 3
## 4
## 5 Notepad++;PHPStorm
## 6 Android Studio;Atom;Eclipse;Emacs;IntelliJ;IPython/Jupyter;Neovim;Notepad++;PyCharm;Sublime Text;V
## NEWCollabToolsWantToWorkWith
## 1 Atom;Sublime Text;Visual Studio Code
## 2 <NA>
## 3 IntelliJ;Vim;Webstorm
## 4 Visual Studio Code
## 5 PHPStorm;Visual Studio Code
## 6 Android Studio;IntelliJ;IPython/Jupyter;PyCharm;Vim;Visual Studio Code
## OpSys
## 1 Windows
## 2 Windows
## 3 Linux-based
## 4 Linux-based
## 5 Windows
## 6 Linux-based
##
## 1 Visit Stack Overflow;Go for a walk or other
## 2

```

```
## 3 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 4 Visit Stack Overflow
## 5 Call a coworker or friend;Visit Stack Overflow
## 6 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## NEWSOSites SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day Yes
## 2 Stack Overflow;Stack Exchange A few times per week Yes
## 3 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 4 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 5 Stack Overflow Multiple times per day No
## 6 Stack Overflow;Stack Exchange Daily or almost daily Yes
## SOPartFreq SOComm NEWOtherComms
## 1 A few times per week Yes, definitely Yes
## 2 A few times per month or weekly Neutral No
## 3 A few times per week Yes, somewhat No
## 4 A few times per month or weekly Yes, somewhat No
## 5 <NA> No, not really No
## 6 Less than once per month or monthly Yes, somewhat No
## Age Gender Trans Sexuality
## 1 25-34 years old Man No Straight / Heterosexual
## 2 Under 18 years old Man No Queer
## 3 35-44 years old Man No Straight / Heterosexual
## 4 25-34 years old Man No Straight / Heterosexual
## 5 25-34 years old Man No Straight / Heterosexual
## 6 25-34 years old Man No Straight / Heterosexual
## Ethnicity Accessibility MentalHealth
## 1 White or of European descent None of the above None of the above
## 2 White or of European descent None of the above None of the above
## 3 White or of European descent None of the above None of the above
## 4 White or of European descent None of the above I have an anxiety disorder
## 5 White or of European descent None of the above None of the above
## 6 White or of European descent None of the above I have an anxiety disorder
## SurveyLength SurveyEase ConvertedCompYearly
## 1 Appropriate in length Easy 25944
## 2 Appropriate in length Easy NA
## 3 Appropriate in length Easy 25944
## 4 Too short Easy 28536
## 5 Appropriate in length Easy 25944
## 6 Appropriate in length Easy 45401
```

In contrast with other countries, the amount of respondents from Greece is smaller. We can check how many observations there are with the `n_distinct()` function.

```
n_distinct(greece$ResponseId)
```

```
## [1] 603
```

The new dataset has 603 responses. Let's check for duplicates before proceeding.

```
isTRUE(duplicated(greece))
```

```
## [1] FALSE
```

We see that we get one False value, meaning that we do not have duplicate entries. We can check for the same question without adding the “is.TRUE()” function. In that case, R will give back a number of Falses and/or Trues. The new data set that I created includes 603 developers that live in Greece. However, I want to extract answers about those that are professionals. I will filter out only those devs that code professionally and are employed full time.

```
pros <- filter(greece, MainBranch == "I am a developer by profession" & Employment == "Employed full-time")
head(pros)
```

```
##      ResponseId      MainBranch      Employment Country US_State
## 1          51 I am a developer by profession Employed full-time Greece    <NA>
## 2         180 I am a developer by profession Employed full-time Greece    <NA>
## 3         209 I am a developer by profession Employed full-time Greece    <NA>
## 4         367 I am a developer by profession Employed full-time Greece    <NA>
## 5         415 I am a developer by profession Employed full-time Greece    <NA>
## 6         506 I am a developer by profession Employed full-time Greece    <NA>
##      UK_Country      EdLevel
## 1          <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 2          <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 3          <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 4          <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 5          <NA> Some college/university study without earning a degree
## 6          <NA> Master's degree (M.A., M.S., M.Eng., MBA, etc.)
##      Age1stCode
## 1 18 - 24 years
## 2 11 - 17 years
## 3 18 - 24 years
## 4 18 - 24 years
## 5 18 - 24 years
## 6 18 - 24 years
##
## 1
## 2 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 3 Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Certification
## 4 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 5 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 6 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
##      YearsCode YearsCodePro      DevType
## 1          12           6 Developer, full-stack
## 2          24          18 Developer, full-stack;System administrator
## 3           9           4 Developer, mobile;Developer, full-stack
## 4           4           3 Developer, full-stack
## 5           9           4 Developer, full-stack;Developer, back-end
## 6           9           6 Developer, front-end
##      OrgSize      Currency CompTotal CompFreq
## 1 20 to 99 employees EUR European Euro      2000 Monthly
## 2 20 to 99 employees EUR European Euro      2000 Monthly
## 3 2 to 9 employees EUR European Euro      2200 Monthly
## 4 2 to 9 employees EUR European Euro      2000 Monthly
## 5 100 to 499 employees EUR European Euro      2000 Monthly
## 6 20 to 99 employees EUR European Euro    205000 Monthly
##      LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2 Java;JavaScript;SQL
```

```

## 3      Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 4      HTML/CSS;JavaScript;Node.js;PHP;SQL
## 5      C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
## 6      HTML/CSS;JavaScript;TypeScript
##      LanguageWantToWorkWith
## 1      HTML/CSS;JavaScript;Node.js;TypeScript
## 2      Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 3 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 4      JavaScript;Node.js;PHP;SQL
## 5      C#
## 6      Java;SQL
##      DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2      IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 3      Couchbase;Elasticsearch;MariaDB
## 4      MySQL;Redis;SQLite
## 5      Firebase;MariaDB;Microsoft SQL Server;MySQL
## 6      <NA>
##      DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2      MariaDB;Microsoft SQL Server;MySQL;Redis
## 3      Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4      MongoDB;MySQL
## 5      <NA>
## 6      <NA>
##      PlatformHaveWorkedWith      PlatformWantToWorkWith
## 1      AWS;DigitalOcean;Microsoft Azure      DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3      <NA>      <NA>
## 4      AWS;DigitalOcean      AWS;Microsoft Azure
## 5      Microsoft Azure      <NA>
## 6      <NA>      <NA>
##      WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2      jQuery;Spring
## 3      Express;React.js
## 4      Laravel;React.js;Symfony;Vue.js
## 5      ASP.NET Core ;jQuery
## 6      React.js
##      WebframeWantToWorkWith      MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2      jQuery;React.js;Spring      <NA>
## 3      Angular;Express;React.js;Vue.js      React Native
## 4      Laravel;React.js;Vue.js      <NA>
## 5      <NA> .NET Framework;.NET Core / .NET 5
## 6      Express;Vue.js      React Native
##      MiscTechWantToWorkWith      ToolsTechHaveWorkedWith
## 1      Hadoop;React Native      Docker;Kubernetes
## 2      <NA>      Git
## 3      Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4      <NA>      Git
## 5 .NET Framework;.NET Core / .NET 5      Docker;Git;Xamarin
## 6      React Native      Git
##      ToolsTechWantToWorkWith      NEWCollabToolsHaveWorkedWith

```

```

## 1      Docker;Terraform      Notepad++;Visual Studio;Visual Studio Code
## 2      Docker;Git;Kubernetes      IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn      Visual Studio Code
## 4      Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5      Docker;Git      Android Studio;Visual Studio;Visual Studio Code
## 6      Docker      IntelliJ;Visual Studio Code
##      NEWCollabToolsWantToWorkWith      OpSys
## 1 Atom;Sublime Text;Visual Studio Code      Windows
## 2      IntelliJ;Vim;Webstorm Linux-based
## 3      Visual Studio Code Linux-based
## 4      PHPStorm;Visual Studio Code      Windows
## 5      <NA>      Windows
## 6      IntelliJ Linux-based
##
## 1      Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 3      Visit Stack O
## 4      Call a coworker or friend;Visit St
## 5      Call a coworker or friend;Visit Stack Overflow;Google it;Watch I
## 6
##      NEWSOSites      SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 2 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 3 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 4      Stack Overflow Multiple times per day      No
## 5 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 6 Stack Overflow;Stack Exchange Multiple times per day      Yes
##      SOPartFreq      SOComm NEWOtherComms
## 1      A few times per week Yes, definitely      Yes
## 2      A few times per week Yes, somewhat      No
## 3      A few times per month or weekly Yes, somewhat      No
## 4      <NA> No, not really      No
## 5 Less than once per month or monthly No, not really      No
## 6      Daily or almost daily Yes, definitely      No
##      Age Gender Trans      Sexuality
## 1 25-34 years old Man No Straight / Heterosexual
## 2 35-44 years old Man No Straight / Heterosexual
## 3 25-34 years old Man No Straight / Heterosexual
## 4 25-34 years old Man No Straight / Heterosexual
## 5 25-34 years old Man No <NA>
## 6 25-34 years old Man No Straight / Heterosexual
##      Ethnicity      Accessibility
## 1      White or of European descent None of the above
## 2      White or of European descent None of the above
## 3      White or of European descent None of the above
## 4      White or of European descent None of the above
## 5 White or of European descent;Hispanic or Latino/a/x None of the above
## 6      White or of European descent Prefer not to say
##      MentalHealth      SurveyLength      SurveyEase
## 1      None of the above Appropriate in length      Easy
## 2      None of the above Appropriate in length      Easy
## 3 I have an anxiety disorder      Too short      Easy
## 4      None of the above Appropriate in length      Easy
## 5      None of the above Appropriate in length      Easy

```



```
## 6          Prefer not to say          Too long Neither easy nor difficult
##   ConvertedCompYearly
## 1          25944
## 2          25944
## 3          28536
## 4          25944
## 5          25944
## 6          2659212
```

```
n_distinct(pros)
```

```
## [1] 307
```

```
head(pros)
```

```
##   ResponseId          MainBranch      Employment Country US_State
## 1         51 I am a developer by profession Employed full-time  Greece  <NA>
## 2        180 I am a developer by profession Employed full-time  Greece  <NA>
## 3        209 I am a developer by profession Employed full-time  Greece  <NA>
## 4        367 I am a developer by profession Employed full-time  Greece  <NA>
## 5        415 I am a developer by profession Employed full-time  Greece  <NA>
## 6        506 I am a developer by profession Employed full-time  Greece  <NA>
##   UK_Country          EdLevel
## 1      <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 2      <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 3      <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 4      <NA> Bachelor's degree (B.A., B.S., B.Eng., etc.)
## 5      <NA> Some college/university study without earning a degree
## 6      <NA> Master's degree (M.A., M.S., M.Eng., MBA, etc.)
##   Age1stCode
## 1 18 - 24 years
## 2 11 - 17 years
## 3 18 - 24 years
## 4 18 - 24 years
## 5 18 - 24 years
## 6 18 - 24 years
##
## 1
## 2 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 3 Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Certification
## 4 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 5 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 6 Other (please specify)
##   YearsCode YearsCodePro          DevType
## 1        12           6 Developer, full-stack
## 2        24          18 Developer, full-stack;System administrator
## 3         9           4 Developer, mobile;Developer, full-stack
## 4         4           3 Developer, full-stack
## 5         9           4 Developer, full-stack;Developer, back-end
## 6         9           6 Developer, front-end
##   OrgSize          Currency CompTotal CompFreq
## 1 20 to 99 employees EUR European Euro      2000 Monthly
## 2 20 to 99 employees EUR European Euro      2000 Monthly
```

```

## 3      2 to 9 employees EUR European Euro      2200 Monthly
## 4      2 to 9 employees EUR European Euro      2000 Monthly
## 5 100 to 499 employees EUR European Euro      2000 Monthly
## 6      20 to 99 employees EUR European Euro    205000 Monthly
##                                     LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2                                     Java;JavaScript;SQL
## 3                               Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 4                               HTML/CSS;JavaScript;Node.js;PHP;SQL
## 5                               C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
## 6                               HTML/CSS;JavaScript;TypeScript
##                                     LanguageWantToWorkWith
## 1                                     HTML/CSS;JavaScript;Node.js;TypeScript
## 2                               Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 3 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 4                                     JavaScript;Node.js;PHP;SQL
## 5                                     C#
## 6                                     Java;SQL
##                                     DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2                                     IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 3                                     Couchbase;Elasticsearch;MariaDB
## 4                                     MySQL;Redis;SQLite
## 5                                     Firebase;MariaDB;Microsoft SQL Server;MySQL
## 6                                     <NA>
##                                     DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2                               MariaDB;Microsoft SQL Server;MySQL;Redis
## 3                               Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4                               MongoDB;MySQL
## 5                               <NA>
## 6                               <NA>
##                                     PlatformHaveWorkedWith
## 1      AWS;DigitalOcean;Microsoft Azure      DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3                                     <NA>                                     <NA>
## 4                               AWS;DigitalOcean      AWS;Microsoft Azure
## 5                               Microsoft Azure      <NA>
## 6                               <NA>                                     <NA>
##                                     WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2                                     jQuery;Spring
## 3                                     Express;React.js
## 4                               Laravel;React.js;Symfony;Vue.js
## 5                                     ASP.NET Core ;jQuery
## 6                                     React.js
##                                     WebframeWantToWorkWith      MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2                               jQuery;React.js;Spring      <NA>
## 3                               Angular;Express;React.js;Vue.js      React Native
## 4                               Laravel;React.js;Vue.js      <NA>
## 5                               <NA> .NET Framework;.NET Core / .NET 5
## 6                               Express;Vue.js      React Native
##                                     MiscTechWantToWorkWith      ToolsTechHaveWorkedWith

```

```

## 1      Hadoop;React Native      Docker;Kubernetes
## 2      <NA>      Git
## 3      Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4      <NA>      Git
## 5 .NET Framework;.NET Core / .NET 5      Docker;Git;Xamarin
## 6      React Native      Git
##      ToolsTechWantToWorkWith      NEWCollabToolsHaveWorkedWith
## 1      Docker;Terraform      Notepad++;Visual Studio;Visual Studio Code
## 2      Docker;Git;Kubernetes      IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn      Visual Studio Code
## 4      Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5      Docker;Git      Android Studio;Visual Studio;Visual Studio Code
## 6      Docker      IntelliJ;Visual Studio Code
##      NEWCollabToolsWantToWorkWith      OpSys
## 1 Atom;Sublime Text;Visual Studio Code      Windows
## 2      IntelliJ;Vim;Webstorm Linux-based
## 3      Visual Studio Code Linux-based
## 4      PHPStorm;Visual Studio Code      Windows
## 5      <NA>      Windows
## 6      IntelliJ Linux-based
##
## 1      Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 3      Visit Stack O
## 4      Call a coworker or friend;Visit St
## 5      Call a coworker or friend;Visit Stack Overflow;Google it;Watch I
## 6
##      NEWSOSites      SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 2 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 3 Stack Overflow;Stack Exchange Daily or almost daily      Yes
## 4      Stack Overflow Multiple times per day      No
## 5 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 6 Stack Overflow;Stack Exchange Multiple times per day      Yes
##      SOPartFreq      SOComm NEWOtherComms
## 1      A few times per week Yes, definitely      Yes
## 2      A few times per week Yes, somewhat      No
## 3      A few times per month or weekly Yes, somewhat      No
## 4      <NA> No, not really      No
## 5 Less than once per month or monthly No, not really      No
## 6      Daily or almost daily Yes, definitely      No
##      Age Gender Trans      Sexuality
## 1 25-34 years old      Man      No Straight / Heterosexual
## 2 35-44 years old      Man      No Straight / Heterosexual
## 3 25-34 years old      Man      No Straight / Heterosexual
## 4 25-34 years old      Man      No Straight / Heterosexual
## 5 25-34 years old      Man      No      <NA>
## 6 25-34 years old      Man      No Straight / Heterosexual
##      Ethnicity      Accessibility
## 1      White or of European descent None of the above
## 2      White or of European descent None of the above
## 3      White or of European descent None of the above
## 4      White or of European descent None of the above
## 5 White or of European descent;Hispanic or Latino/a/x None of the above

```

```
## 6          White or of European descent Prefer not to say
##          MentalHealth          SurveyLength          SurveyEase
## 1      None of the above Appropriate in length          Easy
## 2      None of the above Appropriate in length          Easy
## 3 I have an anxiety disorder          Too short          Easy
## 4      None of the above Appropriate in length          Easy
## 5      None of the above Appropriate in length          Easy
## 6      Prefer not to say          Too long Neither easy nor difficult
##  ConvertedCompYearly
## 1          25944
## 2          25944
## 3          28536
## 4          25944
## 5          25944
## 6          2659212
```

The new data set is ready. For start, I want to check the median salary of developers living in Greece

```
median(pros$ConvertedCompYearly)
```

```
## [1] NA
```

It seems that we have some respondents that did not include their salary. We have to clean the data set and keep only those responses with actual information. In this case I will remove the NA values. However, another good practice that suits proper analysis would be the replacement of NAs with the MEAN or the MEDIAN of the rest of the observations. Also, let's remove some columns that are not needed.

```
pros_omit <- pros%>%
  drop_na(ConvertedCompYearly)
pros_omit <- pros_omit%>%
  select(-c(US_State, UK_Country))
```

Let's check the median salary of the developers living in Greece.

```
median(pros_omit$ConvertedCompYearly)
```

```
## [1] 25944
```

The median salary of developers living in Greece is 25944 Euros. If we take a look at our data set, we will notice that there is a column which mentions the programming languages these devs have worked with. For the sake of this small case study, let's create a column with the number of languages each dev has worked with and know, and let's see if there is a correlation with their yearly salary.

```
pros_omit$lang_work <- gsub(";", " ", pros_omit$LanguageHaveWorkedWith) ## create a new column and repl
langs <- pros_omit$lang_work ## create a new vector with the separated values
langs2 <- unlist(sapply(langs, strsplit, split = "\\ ", USE.NAMES = FALSE)) ##unlist the vector langs2
pros_omit$langs_number <- (str_count(langs2, " ")) ##assign the number of strings as a number in our da
pros_omit$langs_number <- pros_omit$langs_number + 1 ## add 1 in the column for correcting the missing .
head(pros_omit)
```

ResponseId	MainBranch	Employment	Country
1	51 I am a developer by profession	Employed full-time	Greece
2	180 I am a developer by profession	Employed full-time	Greece
3	209 I am a developer by profession	Employed full-time	Greece
4	367 I am a developer by profession	Employed full-time	Greece
5	415 I am a developer by profession	Employed full-time	Greece
6	506 I am a developer by profession	Employed full-time	Greece

EdLevel	Age1stCode
Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years
Bachelor's degree (B.A., B.S., B.Eng., etc.)	11 - 17 years
Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years
Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years
Some college/university study without earning a degree	18 - 24 years
Master's degree (M.A., M.S., M.Eng., MBA, etc.)	18 - 24 years

YearsCode	YearsCodePro	DevType
12	6	Developer, full-stack
24	18	Developer, full-stack;System administrator
9	4	Developer, mobile;Developer, full-stack
4	3	Developer, full-stack
9	4	Developer, full-stack;Developer, back-end
9	6	Developer, front-end

OrgSize	Currency	CompTotal	CompFreq
20 to 99 employees	EUR European Euro	2000	Monthly
20 to 99 employees	EUR European Euro	2000	Monthly
2 to 9 employees	EUR European Euro	2200	Monthly
2 to 9 employees	EUR European Euro	2000	Monthly
100 to 499 employees	EUR European Euro	2000	Monthly
20 to 99 employees	EUR European Euro	205000	Monthly

LanguageHaveWorkedWith
C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
Java;JavaScript;SQL
Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
HTML/CSS;JavaScript;Node.js;PHP;SQL
C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
HTML/CSS;JavaScript;TypeScript

LanguageWantToWorkWith
HTML/CSS;JavaScript;Node.js;TypeScript
Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
JavaScript;Node.js;PHP;SQL
C#
Java;SQL

DatabaseHaveWorkedWith
Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
IBM DB2;MariaDB;Microsoft SQL Server;MySQL
Couchbase;Elasticsearch;MariaDB
MySQL;Redis;SQLite

```

## 5           Firebase;MariaDB;Microsoft SQL Server;MySQL
## 6                                     <NA>
##           DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2           MariaDB;Microsoft SQL Server;MySQL;Redis
## 3 Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4           MongoDB;MySQL
## 5                                     <NA>
## 6                                     <NA>
##           PlatformHaveWorkedWith           PlatformWantToWorkWith
## 1   AWS;DigitalOcean;Microsoft Azure           DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3                                     <NA>                                     <NA>
## 4           AWS;DigitalOcean           AWS;Microsoft Azure
## 5           Microsoft Azure           <NA>
## 6           <NA>           <NA>
##           WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2           jQuery;Spring
## 3           Express;React.js
## 4           Laravel;React.js;Symfony;Vue.js
## 5           ASP.NET Core ;jQuery
## 6           React.js
##           WebframeWantToWorkWith           MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2           jQuery;React.js;Spring           <NA>
## 3 Angular;Express;React.js;Vue.js           React Native
## 4           Laravel;React.js;Vue.js           <NA>
## 5           <NA> .NET Framework;.NET Core / .NET 5
## 6           Express;Vue.js           React Native
##           MiscTechWantToWorkWith   ToolsTechHaveWorkedWith
## 1 Hadoop;React Native           Docker;Kubernetes
## 2           <NA>           Git
## 3 Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4           <NA>           Git
## 5 .NET Framework;.NET Core / .NET 5           Docker;Git;Xamarin
## 6           React Native           Git
##           ToolsTechWantToWorkWith           NEWCollabToolsHaveWorkedWith
## 1 Docker;Terraform           Notepad++;Visual Studio;Visual Studio Code
## 2 Docker;Git;Kubernetes           IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn           Visual Studio Code
## 4 Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5 Docker;Git Android Studio;Visual Studio;Visual Studio Code
## 6 Docker           IntelliJ;Visual Studio Code
##           NEWCollabToolsWantToWorkWith   OpSys
## 1 Atom;Sublime Text;Visual Studio Code   Windows
## 2           IntelliJ;Vim;Webstorm Linux-based
## 3           Visual Studio Code Linux-based
## 4 PHPStorm;Visual Studio Code   Windows
## 5           <NA>   Windows
## 6           IntelliJ Linux-based
##
## 1 Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;

```

```

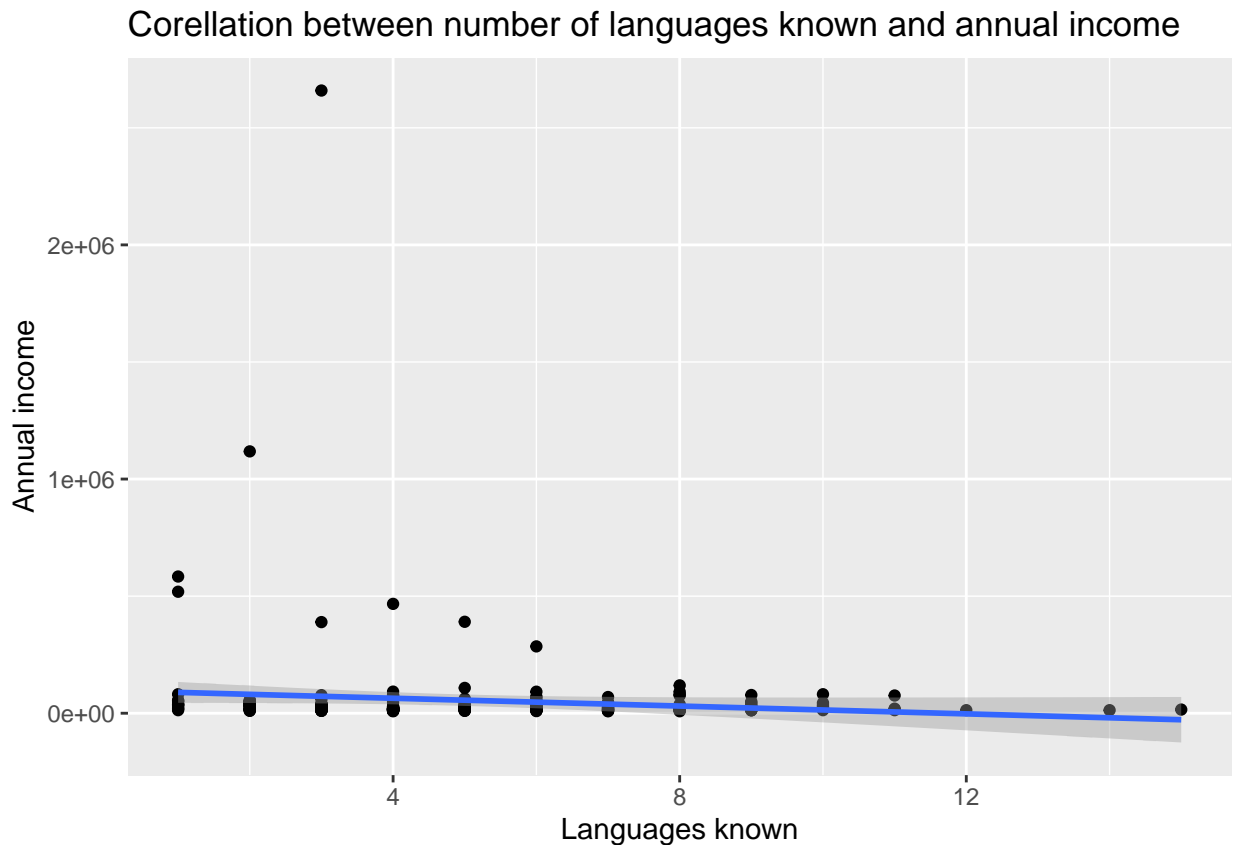
## 3 Visit Stack O
## 4 Call a coworker or friend;Visit St
## 5 Call a coworker or friend;Visit Stack Overflow;Google it;Watch I
## 6
## NEWSOSites SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day Yes
## 2 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 3 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 4 Stack Overflow Multiple times per day No
## 5 Stack Overflow;Stack Exchange Multiple times per day Yes
## 6 Stack Overflow;Stack Exchange Multiple times per day Yes
## SOPartFreq SOComm NEWOtherComms
## 1 A few times per week Yes, definitely Yes
## 2 A few times per week Yes, somewhat No
## 3 A few times per month or weekly Yes, somewhat No
## 4 <NA> No, not really No
## 5 Less than once per month or monthly No, not really No
## 6 Daily or almost daily Yes, definitely No
## Age Gender Trans Sexuality
## 1 25-34 years old Man No Straight / Heterosexual
## 2 35-44 years old Man No Straight / Heterosexual
## 3 25-34 years old Man No Straight / Heterosexual
## 4 25-34 years old Man No Straight / Heterosexual
## 5 25-34 years old Man No <NA>
## 6 25-34 years old Man No Straight / Heterosexual
## Ethnicity Accessibility
## 1 White or of European descent None of the above
## 2 White or of European descent None of the above
## 3 White or of European descent None of the above
## 4 White or of European descent None of the above
## 5 White or of European descent;Hispanic or Latino/a/x None of the above
## 6 White or of European descent Prefer not to say
## MentalHealth SurveyLength SurveyEase
## 1 None of the above Appropriate in length Easy
## 2 None of the above Appropriate in length Easy
## 3 I have an anxiety disorder Too short Easy
## 4 None of the above Appropriate in length Easy
## 5 None of the above Appropriate in length Easy
## 6 Prefer not to say Too long Neither easy nor difficult
## ConvertedCompYearly lang_work
## 1 25944 C# HTML/CSS JavaScript Node.js PowerShell TypeScript VBA
## 2 25944 Java JavaScript SQL
## 3 28536 Bash/Shell HTML/CSS JavaScript Node.js SQL
## 4 25944 HTML/CSS JavaScript Node.js PHP SQL
## 5 25944 C# HTML/CSS JavaScript Node.js PowerShell SQL
## 6 2659212 HTML/CSS JavaScript TypeScript
## langs_number
## 1 7
## 2 3
## 3 5
## 4 5
## 5 6
## 6 3

```

Let's see if there is a correlation between the number of languages used by devs and their yearly income

```
ggplot(pros_omit, aes(x = langs_number, y = ConvertedCompYearly)) +
  geom_point()+
  geom_smooth(method = lm)+
  ggtitle("Corellation between number of languages known and annual income")+
  labs(x = "Languages known", y = "Annual income")
```

```
## 'geom_smooth()' using formula 'y ~ x'
```



This data set includes some extreme values, such as 1 million or 2 million Euros. For reasons of simplicity let's narrow down these values by setting a filter to yearly income and re-plot our results.

```
pros_inc <- subset(pros_omit, pros_omit$ConvertedCompYearly < 80000)
head(pros_inc)
```

```
##   ResponseId      MainBranch      Employment Country
## 1         51 I am a developer by profession Employed full-time Greece
## 2        180 I am a developer by profession Employed full-time Greece
## 3        209 I am a developer by profession Employed full-time Greece
## 4        367 I am a developer by profession Employed full-time Greece
## 5        415 I am a developer by profession Employed full-time Greece
## 7        595 I am a developer by profession Employed full-time Greece
##                                     EdLevel   Age1stCode
## 1      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
```



```

## 2 Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 3 Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 4 Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 5 Some college/university study without earning a degree 18 - 24 years
## 7 Some college/university study without earning a degree 11 - 17 years
##
## 1
## 2 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 3 Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Certification
## 4 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 5 Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 7 Other online resources (ex: videos, blogs, etc);School;Other (please specify)

## YearsCode YearsCodePro DevType
## 1 12 6 Developer, full-stack
## 2 24 18 Developer, full-stack;System administrator
## 3 9 4 Developer, mobile;Developer, full-stack
## 4 4 3 Developer, full-stack
## 5 9 4 Developer, full-stack;Developer, back-end
## 7 13 10 Developer, full-stack;Developer, back-end

## OrgSize Currency CompTotal CompFreq
## 1 20 to 99 employees EUR European Euro 2000 Monthly
## 2 20 to 99 employees EUR European Euro 2000 Monthly
## 3 2 to 9 employees EUR European Euro 2200 Monthly
## 4 2 to 9 employees EUR European Euro 2000 Monthly
## 5 100 to 499 employees EUR European Euro 2000 Monthly
## 7 20 to 99 employees EUR European Euro 24000 Yearly

## LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2 Java;JavaScript;SQL
## 3 Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 4 HTML/CSS;JavaScript;Node.js;PHP;SQL
## 5 C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
## 7 HTML/CSS;JavaScript;PHP;R;SQL

## LanguageWantToWorkWith
## 1 HTML/CSS;JavaScript;Node.js;TypeScript
## 2 Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 3 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 4 JavaScript;Node.js;PHP;SQL
## 5 C#
## 7 HTML/CSS;JavaScript;Node.js;PHP;R;SQL

## DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2 IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 3 Couchbase;Elasticsearch;MariaDB
## 4 MySQL;Redis;SQLite
## 5 Firebase;MariaDB;Microsoft SQL Server;MySQL
## 7 MariaDB;MySQL

## DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2 MariaDB;Microsoft SQL Server;MySQL;Redis
## 3 Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4 MongoDB;MySQL
## 5 <NA>
## 7 Elasticsearch;MariaDB;MongoDB;MySQL

```

```

## PlatformHaveWorkedWith PlatformWantToWorkWith
## 1 AWS;DigitalOcean;Microsoft Azure DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3 <NA> <NA>
## 4 AWS;DigitalOcean AWS;Microsoft Azure
## 5 Microsoft Azure <NA>
## 7 Heroku AWS
## WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2 jQuery;Spring
## 3 Express;React.js
## 4 Laravel;React.js;Symfony;Vue.js
## 5 ASP.NET Core ;jQuery
## 7 jQuery
## WebframeWantToWorkWith MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2 jQuery;React.js;Spring <NA>
## 3 Angular;Express;React.js;Vue.js React Native
## 4 Laravel;React.js;Vue.js <NA>
## 5 <NA> .NET Framework;.NET Core / .NET 5
## 7 jQuery;Laravel;React.js <NA>
## MiscTechWantToWorkWith ToolsTechHaveWorkedWith
## 1 Hadoop;React Native Docker;Kubernetes
## 2 <NA> Git
## 3 Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4 <NA> Git
## 5 .NET Framework;.NET Core / .NET 5 Docker;Git;Xamarin
## 7 <NA> Docker;Git
## ToolsTechWantToWorkWith NEWCollabToolsHaveWorkedWith
## 1 Docker;Terraform Notepad++;Visual Studio;Visual Studio Code
## 2 Docker;Git;Kubernetes IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn Visual Studio Code
## 4 Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5 Docker;Git Android Studio;Visual Studio;Visual Studio Code
## 7 Docker;Git Visual Studio Code
## NEWCollabToolsWantToWorkWith OpSys
## 1 Atom;Sublime Text;Visual Studio Code Windows
## 2 IntelliJ;Vim;Webstorm Linux-based
## 3 Visual Studio Code Linux-based
## 4 PHPStorm;Visual Studio Code Windows
## 5 <NA> Windows
## 7 PHPStorm;Visual Studio Code Linux-based
##
## 1 Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 3 Visit Stack O
## 4 Call a coworker or friend;Visit St
## 5 Call a coworker or friend;Visit Stack Overflow;Google it;Watch l
## 7 Call a coworker or friend;Visit Stack Overflow;Google it;
## NEWSOSites SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day Yes
## 2 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 3 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 4 Stack Overflow Multiple times per day No

```

```

## 5 Stack Overflow;Stack Exchange Multiple times per day      Yes
## 7 Stack Overflow;Stack Exchange Daily or almost daily      Yes
##                               SOPartFreq      SOComm
## 1                               A few times per week Yes, definitely
## 2                               A few times per week  Yes, somewhat
## 3                               A few times per month or weekly  Yes, somewhat
## 4                               <NA> No, not really
## 5                               Less than once per month or monthly No, not really
## 7 I have never participated in Q&A on Stack Overflow  Yes, somewhat
## NEWOtherComms      Age Gender Trans      Sexuality
## 1      Yes 25-34 years old      Man      No Straight / Heterosexual
## 2      No 35-44 years old      Man      No Straight / Heterosexual
## 3      No 25-34 years old      Man      No Straight / Heterosexual
## 4      No 25-34 years old      Man      No Straight / Heterosexual
## 5      No 25-34 years old      Man      No      <NA>
## 7      No 25-34 years old      Man      No Straight / Heterosexual
##                               Ethnicity      Accessibility
## 1      White or of European descent None of the above
## 2      White or of European descent None of the above
## 3      White or of European descent None of the above
## 4      White or of European descent None of the above
## 5 White or of European descent;Hispanic or Latino/a/x None of the above
## 7      White or of European descent None of the above
##      MentalHealth      SurveyLength SurveyEase
## 1      None of the above Appropriate in length      Easy
## 2      None of the above Appropriate in length      Easy
## 3 I have an anxiety disorder      Too short      Easy
## 4      None of the above Appropriate in length      Easy
## 5      None of the above Appropriate in length      Easy
## 7      None of the above Appropriate in length      Easy
##      ConvertedCompYearly      lang_work
## 1      25944 C# HTML/CSS JavaScript Node.js PowerShell TypeScript VBA
## 2      25944      Java JavaScript SQL
## 3      28536      Bash/Shell HTML/CSS JavaScript Node.js SQL
## 4      25944      HTML/CSS JavaScript Node.js PHP SQL
## 5      25944      C# HTML/CSS JavaScript Node.js PowerShell SQL
## 7      25944      HTML/CSS JavaScript PHP R SQL
##      langs_number
## 1      7
## 2      3
## 3      5
## 4      5
## 5      6
## 7      5

```

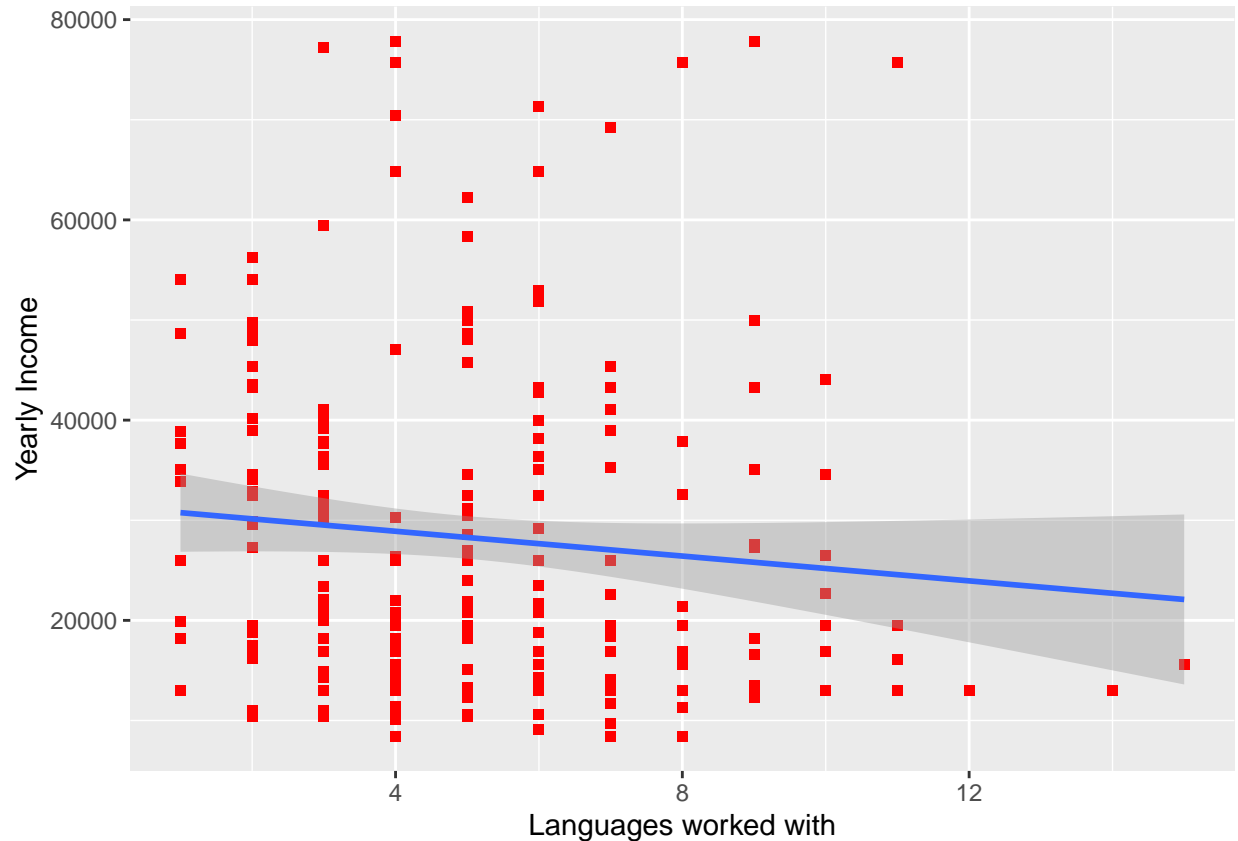
Create the scatter plot again

```

ggplot(pros_inc, aes(x = langs_number, y = ConvertedCompYearly)) +
  geom_point(col = "red", pch = 15)+
  geom_smooth(method = lm)+
  labs(x = "Languages worked with", y = "Yearly Income")

```

```
## 'geom_smooth()' using formula 'y ~ x'
```



By plotting the data, it is obvious that there is not a direct correlation between the number of languages known and previously used by developers and their annual income. Now, we will explore the potential correlation between income and years coding and age. First we have to clean those columns in order to explore our data. Then we will create a new plot

```
pros_inc%>%
  na.omit(pros_inc$YearsCodePro)
```

##	ResponseId	MainBranch	Employment	Country
## 1	51	I am a developer by profession	Employed full-time	Greece
## 9	1146	I am a developer by profession	Employed full-time	Greece
## 12	1648	I am a developer by profession	Employed full-time	Greece
## 16	2411	I am a developer by profession	Employed full-time	Greece
## 19	2892	I am a developer by profession	Employed full-time	Greece
## 23	4419	I am a developer by profession	Employed full-time	Greece
## 29	5295	I am a developer by profession	Employed full-time	Greece
## 41	12781	I am a developer by profession	Employed full-time	Greece
## 46	13468	I am a developer by profession	Employed full-time	Greece
## 47	13523	I am a developer by profession	Employed full-time	Greece
## 56	14429	I am a developer by profession	Employed full-time	Greece
## 62	15317	I am a developer by profession	Employed full-time	Greece
## 65	15656	I am a developer by profession	Employed full-time	Greece
## 67	16131	I am a developer by profession	Employed full-time	Greece
## 74	18010	I am a developer by profession	Employed full-time	Greece
## 75	18121	I am a developer by profession	Employed full-time	Greece
## 83	20466	I am a developer by profession	Employed full-time	Greece

## 86	23105	I am a developer by profession	Employed full-time	Greece
## 87	23162	I am a developer by profession	Employed full-time	Greece
## 89	23426	I am a developer by profession	Employed full-time	Greece
## 90	23870	I am a developer by profession	Employed full-time	Greece
## 94	24297	I am a developer by profession	Employed full-time	Greece
## 103	25017	I am a developer by profession	Employed full-time	Greece
## 105	25336	I am a developer by profession	Employed full-time	Greece
## 108	26006	I am a developer by profession	Employed full-time	Greece
## 113	27935	I am a developer by profession	Employed full-time	Greece
## 117	30038	I am a developer by profession	Employed full-time	Greece
## 119	31635	I am a developer by profession	Employed full-time	Greece
## 123	32218	I am a developer by profession	Employed full-time	Greece
## 135	37462	I am a developer by profession	Employed full-time	Greece
## 139	39896	I am a developer by profession	Employed full-time	Greece
## 144	41976	I am a developer by profession	Employed full-time	Greece
## 150	45529	I am a developer by profession	Employed full-time	Greece
## 152	45692	I am a developer by profession	Employed full-time	Greece
## 159	48431	I am a developer by profession	Employed full-time	Greece
## 161	48809	I am a developer by profession	Employed full-time	Greece
## 170	50669	I am a developer by profession	Employed full-time	Greece
## 173	51683	I am a developer by profession	Employed full-time	Greece
## 175	52518	I am a developer by profession	Employed full-time	Greece
## 177	53098	I am a developer by profession	Employed full-time	Greece
## 179	53784	I am a developer by profession	Employed full-time	Greece
## 202	64559	I am a developer by profession	Employed full-time	Greece
## 205	65186	I am a developer by profession	Employed full-time	Greece
## 206	65452	I am a developer by profession	Employed full-time	Greece
## 211	68472	I am a developer by profession	Employed full-time	Greece
## 212	68680	I am a developer by profession	Employed full-time	Greece
## 222	72994	I am a developer by profession	Employed full-time	Greece
## 240	82388	I am a developer by profession	Employed full-time	Greece
##			EdLevel	Age1stCode
## 1		Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years	
## 9		Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years	
## 12		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	5 - 10 years	
## 16		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	11 - 17 years	
## 19		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	18 - 24 years	
## 23		Bachelor's degree (B.A., B.S., B.Eng., etc.)	11 - 17 years	
## 29		Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years	
## 41		Bachelor's degree (B.A., B.S., B.Eng., etc.)	5 - 10 years	
## 46		Associate degree (A.A., A.S., etc.)	25 - 34 years	
## 47		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	11 - 17 years	
## 56		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	5 - 10 years	
## 62		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	18 - 24 years	
## 65		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	18 - 24 years	
## 67		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	5 - 10 years	
## 74		Bachelor's degree (B.A., B.S., B.Eng., etc.)	11 - 17 years	
## 75	Some college/university study without earning a degree		5 - 10 years	
## 83		Other doctoral degree (Ph.D., Ed.D., etc.)	5 - 10 years	
## 86	Some college/university study without earning a degree		11 - 17 years	
## 87		Bachelor's degree (B.A., B.S., B.Eng., etc.)	11 - 17 years	
## 89	Some college/university study without earning a degree		5 - 10 years	
## 90		Master's degree (M.A., M.S., M.Eng., MBA, etc.)	5 - 10 years	
## 94		Bachelor's degree (B.A., B.S., B.Eng., etc.)	18 - 24 years	

```

## 103      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 105      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 108 Some college/university study without earning a degree 11 - 17 years
## 113      Bachelor's degree (B.A., B.S., B.Eng., etc.) 5 - 10 years
## 117      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 18 - 24 years
## 119 Some college/university study without earning a degree 11 - 17 years
## 123      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 135      Bachelor's degree (B.A., B.S., B.Eng., etc.) 5 - 10 years
## 139      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 144      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 18 - 24 years
## 150      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 152      Other doctoral degree (Ph.D., Ed.D., etc.) 18 - 24 years
## 159 Some college/university study without earning a degree 18 - 24 years
## 161      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 170      Other doctoral degree (Ph.D., Ed.D., etc.) 5 - 10 years
## 173      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 175      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 177      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 179      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 202      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 205      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 206      Bachelor's degree (B.A., B.S., B.Eng., etc.) 5 - 10 years
## 211      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 212      Master's degree (M.A., M.S., M.Eng., MBA, etc.) 11 - 17 years
## 222      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 240 Some college/university study without earning a degree 11 - 17 years
##
## 1
## 9
## 12      Other online resources (ex: videos, blogs,
## 16
## 19      Other online resources (ex: videos, blogs, etc);S
## 23      Other online resour
## 29      Other online resources (ex: videos, blogs, etc);S
## 41
## 46
## 47
## 56
## 62
## 65
## 67      Other online resources (ex: videos, blogs, etc);Friend or family member;Online Courses or
## 74
## 75
## 83
## 86
## 87      Other online resources (ex: videos, blogs, etc);School;Online Forum;Friend or family m
## 89      Other online resources (ex: vid
## 90
## 94      Other online resources (ex: videos, blogs,
## 103
## 105
## 108      Other online resources (ex: videos, blogs, etc);Online Courses or
## 113
## 117

```

```

## 119 Coding Bootcamp;Other online resources (ex: videos, blogs, etc);S
## 123 Other online resources (ex: videos, blogs, etc);Online Forum;Friend or family m
## 135 Other online resources (ex: videos, blogs, etc);School;Online Forum;Friend or family member;Onlin
## 139 Other online resources (ex:
## 144 Coding Bootcamp;Other online resources (ex: videos, blogs,
## 150
## 152 Other online resources (ex: videos, blogs, etc);Online Courses or (
## 159 Other online
## 161
## 170
## 173 S
## 175 Cod
## 177 Other online reso
## 179 Other online resources (ex: videos, blogs, etc);Online F
## 202 Other online resources (ex: videos, blogs, etc);S
## 205 Other online resources (ex: videos, blogs, etc);School;Online L
## 206 Other online resources (ex: videos, blogs, etc);School;Onlin
## 211
## 212 Other online resources (ex: videos, blogs, etc);School;Online L
## 222 Other online resources (ex: vide
## 240
## YearsCode YearsCodePro
## 1 12 6
## 9 2 Less than 1 year
## 12 20 2
## 16 20 15
## 19 14 6
## 23 9 6
## 29 7 3
## 41 4 4
## 46 2 1
## 47 7 2
## 56 26 7
## 62 11 6
## 65 15 10
## 67 28 14
## 74 20 8
## 75 9 2
## 83 30 7
## 86 18 8
## 87 8 4
## 89 28 16
## 90 20 15
## 94 5 5
## 103 22 13
## 105 10 4
## 108 7 6
## 113 30 16
## 117 8 4
## 119 15 10
## 123 25 15
## 135 15 7
## 139 11 7
## 144 3 2

```

## 150	6	2
## 152	24	18
## 159	12	6
## 161	19	13
## 170	28	15
## 173	12	5
## 175	3	2
## 177	10	8
## 179	9	4
## 202	10	2
## 205	9	2
## 206	8	4
## 211	10	6
## 212	36	28
## 222	8	3
## 240	5	3
##		
## 1		
## 9		
## 12		
## 16		Developer
## 19		
## 23		
## 29		
## 41		
## 46		
## 47		
## 56		
## 62		
## 65		
## 67		
## 74		
## 75		
## 83	Developer, desktop or enterprise applications;Developer, full-stack;Data scientist or machine learning	
## 86		Developer, mobile
## 87		
## 89		
## 90		
## 94		
## 103		
## 105		
## 108		
## 113	Developer, mobile;Developer, full-stack;Developer, back-end;DevOps specialist;Engineering manager	
## 117		
## 119		
## 123		
## 135		
## 139		
## 144		
## 150		
## 152		Developer, mobile
## 159		
## 161		
## 170		

## 173					Developer, mobi
## 175					
## 177					
## 179					
## 202					
## 205					Developer, desktop or
## 206					
## 211					
## 212					
## 222					
## 240					
##		OrgSize	Currency	CompTotal	CompFreq
## 1	20 to 99 employees	EUR	European Euro	2000	Monthly
## 9	20 to 99 employees	EUR	European Euro	650	Monthly
## 12	20 to 99 employees	EUR	European Euro	1500	Monthly
## 16	10 to 19 employees	EUR	European Euro	2500	Monthly
## 19	2 to 9 employees	EUR	European Euro	2000	Monthly
## 23	10 to 19 employees	EUR	European Euro	3000	Monthly
## 29	100 to 499 employees	EUR	European Euro	24500	Yearly
## 41	10 to 19 employees	EUR	European Euro	1300	Monthly
## 46	100 to 499 employees	EUR	European Euro	1000	Monthly
## 47	20 to 99 employees	EUR	European Euro	1300	Monthly
## 56	10 to 19 employees	EUR	European Euro	30100	Yearly
## 62	100 to 499 employees	EUR	European Euro	45000	Yearly
## 65	500 to 999 employees	EUR	European Euro	28000	Yearly
## 67	20 to 99 employees	EUR	European Euro	36200	Yearly
## 74	20 to 99 employees	EUR	European Euro	44450	Yearly
## 75	2 to 9 employees	EUR	European Euro	45000	Yearly
## 83	20 to 99 employees	EUR	European Euro	60000	Yearly
## 86	10,000 or more employees	EUR	European Euro	64000	Yearly
## 87	10 to 19 employees	EUR	European Euro	900	Monthly
## 89	100 to 499 employees	EUR	European Euro	46200	Yearly
## 90	10,000 or more employees	EUR	European Euro	35350	Yearly
## 94	500 to 999 employees	EUR	European Euro	1350	Monthly
## 103	1,000 to 4,999 employees	EUR	European Euro	35000	Yearly
## 105	20 to 99 employees	EUR	European Euro	1750	Monthly
## 108	100 to 499 employees	EUR	European Euro	42350	Yearly
## 113	20 to 99 employees	EUR	European Euro	2000	Monthly
## 117	10 to 19 employees	EUR	European Euro	72000	Yearly
## 119	20 to 99 employees	EUR	European Euro	1200	Monthly
## 123	100 to 499 employees	EUR	European Euro	1000	Monthly
## 135	1,000 to 4,999 employees	EUR	European Euro	38000	Yearly
## 139	500 to 999 employees	EUR	European Euro	38000	Yearly
## 144	10 to 19 employees	EUR	European Euro	1600	Monthly
## 150	2 to 9 employees	EUR	European Euro	1000	Monthly
## 152	20 to 99 employees	EUR	European Euro	49000	Yearly
## 159	20 to 99 employees	EUR	European Euro	25000	Yearly
## 161	500 to 999 employees	EUR	European Euro	3850	Monthly
## 170	500 to 999 employees	EUR	European Euro	70000	Yearly
## 173	10 to 19 employees	EUR	European Euro	1600	Monthly
## 175	100 to 499 employees	EUR	European Euro	1300	Monthly
## 177	2 to 9 employees	EUR	European Euro	650	Monthly
## 179	20 to 99 employees	EUR	European Euro	1000	Monthly
## 202	2 to 9 employees	EUR	European Euro	815	Monthly

## 205	10,000 or more employees	EUR European Euro	1000	Monthly
## 206	20 to 99 employees	EUR European Euro	40000	Yearly
## 211	20 to 99 employees	EUR European Euro	2700	Monthly
## 212	1,000 to 4,999 employees	EUR European Euro	2500	Monthly
## 222	20 to 99 employees	EUR European Euro	1400	Monthly
## 240	2 to 9 employees	USD\United States dollar	22000	Yearly
##				LanguageHaveWorkedWith
## 1		C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA		
## 9		C#;HTML/CSS;JavaScript;PowerShell		
## 12		C#;HTML/CSS;JavaScript;Node.js		
## 16		Bash/Shell;Dart;HTML/CSS;Java;JavaScript;SQL		
## 19		C#;SQL;VBA		
## 23		C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL;TypeScript		
## 29		C#;Java;JavaScript;LISP;Node.js;PowerShell;Python;SQL;TypeScript;VBA		
## 41		C#;SQL		
## 46		Assembly;C;C#;SQL		
## 47		Java;JavaScript;Python;SQL		
## 56		C#;HTML/CSS;Java;JavaScript;PHP;Python;SQL;TypeScript		
## 62		Dart;Python		
## 65		Java;JavaScript;Node.js;TypeScript		
## 67		Bash/Shell;Python;SQL		
## 74		C#;HTML/CSS;JavaScript;SQL;TypeScript		
## 75		Assembly;Python		
## 83		Assembly;Bash/Shell;C;Go;Perl;Python		
## 86		C#;HTML/CSS;JavaScript;Node.js;PowerShell;Python;TypeScript		
## 87		C#;HTML/CSS;JavaScript;Python;SQL;TypeScript;VBA		
## 89		Bash/Shell;C#;HTML/CSS;Java;JavaScript;Node.js;PHP;SQL;TypeScript		
## 90		C#;HTML/CSS;Java;JavaScript;SQL;VBA		
## 94		HTML/CSS;JavaScript		
## 103		C#;C++;HTML/CSS;JavaScript;Node.js;PHP;SQL;VBA		
## 105		Dart;Go;HTML/CSS;Java;JavaScript;Kotlin;Node.js;PHP;Python;SQL		
## 108		C#;HTML/CSS;JavaScript;Python;SQL		
## 113		C#;HTML/CSS;Java;JavaScript;Node.js;SQL;VBA		
## 117		Java;JavaScript;Node.js;TypeScript		
## 119		C#;HTML/CSS;JavaScript;Node.js;SQL;TypeScript		
## 123		Bash/Shell;HTML/CSS;Java;JavaScript;Node.js;PowerShell;Python;Ruby;Rust;SQL;VBA		
## 135		C#;Go;Java;JavaScript;Node.js;PHP;SQL		
## 139		C#;Python;TypeScript		
## 144		C#;Python;SQL		
## 150		C;HTML/CSS;JavaScript;Node.js;Objective-C;PowerShell;Python;SQL;TypeScript		
## 152		C#;HTML/CSS;JavaScript;Node.js;Python;SQL		
## 159		HTML/CSS;JavaScript;Kotlin;PHP;Python		
## 161		C#;HTML/CSS;Java;JavaScript;SQL		
## 170		C;C++;Groovy;HTML/CSS;Java;JavaScript;Node.js;Perl;PHP;PowerShell;Python		
## 173		C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL		
## 175		C#;C++;SQL		
## 177		HTML/CSS;JavaScript;Node.js;PHP;Python;R;SQL;TypeScript		
## 179		C#		
## 202		Dart;HTML/CSS;JavaScript;Node.js;PHP;SQL		
## 205	Assembly;Bash/Shell;C;C#;C++;Go;HTML/CSS;Java;JavaScript;Kotlin;Matlab;PHP;Python;SQL			
## 206	Bash/Shell;Groovy;Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript			
## 211	Assembly;Bash/Shell;C;HTML/CSS;JavaScript;Julia;R;SQL;VBA			
## 212	C#;Delphi;F#;JavaScript;TypeScript			
## 222	Bash/Shell;C#;C++;HTML/CSS;Java;JavaScript;PowerShell;Python;SQL			

```

## 240                                HTML/CSS; JavaScript; Ruby; SQL
##                                LanguageWantToWorkWith
## 1                                HTML/CSS; JavaScript; Node.js; TypeScript
## 9                                Bash/Shell; C#; JavaScript; PowerShell
## 12                               Assembly; C; C++; JavaScript
## 16                               Java; SQL
## 19                               C#; SQL
## 23                               C#; HTML/CSS; JavaScript; Node.js; SQL; TypeScript
## 29                               Go; Rust; Scala
## 41                               C#; SQL
## 46                               F#; PowerShell; TypeScript
## 47                               Go; Java; Python; Rust; TypeScript
## 56                               Go; Java; JavaScript; Kotlin; Python; SQL
## 62                               Python; Rust; Scala
## 65                               Go; Java; JavaScript; Ruby; TypeScript
## 67                               Bash/Shell; Go; Python; SQL
## 74                               C#; HTML/CSS; JavaScript; SQL; TypeScript
## 75                               C++; Python
## 83                               C; C++; Go; JavaScript; Node.js; Python; Rust
## 86                               C#; HTML/CSS; JavaScript; Node.js; PowerShell; Python; TypeScript
## 87                               C#; HTML/CSS; JavaScript; Node.js; Python; Rust; SQL; TypeScript
## 89                               Bash/Shell; C#; HTML/CSS; Java; JavaScript; Node.js; Rust; SQL; TypeScript
## 90                               C#; Java; JavaScript; Node.js; SQL
## 94                               Node.js; TypeScript
## 103                              C#; HTML/CSS; Java; JavaScript; Node.js; SQL
## 105                              Dart; Go
## 108                              C#; HTML/CSS; JavaScript; Python
## 113                              C#; HTML/CSS; Java; JavaScript; Kotlin; SQL; VBA
## 117                              JavaScript; Node.js; TypeScript
## 119                              HTML/CSS; JavaScript; Node.js; Python; SQL; TypeScript
## 123 Bash/Shell; Dart; F#; Go; Kotlin; Node.js; PowerShell; Python; Ruby; Rust; SQL; TypeScript
## 135                              Go; Rust
## 139                              C#; Python; TypeScript
## 144                              Bash/Shell; Go; Scala
## 150                              C; Clojure; Elixir; Go; JavaScript; Ruby; Rust; SQL; TypeScript
## 152                              Haskell; Rust
## 159                              HTML/CSS; JavaScript; Kotlin; PHP; Python; TypeScript
## 161                              C#; Go
## 170                              HTML/CSS; Java; JavaScript; PowerShell; Python
## 173                              Go; JavaScript; TypeScript
## 175                              C#; SQL
## 177                              HTML/CSS; JavaScript; Node.js; PHP; Python; SQL; TypeScript
## 179                              C#; Go
## 202                              Dart; Node.js; PHP; TypeScript
## 205                              C; C#; C++; Java; Kotlin; Objective-C; Python; SQL; VBA
## 206                              Go; JavaScript; Kotlin; Node.js; SQL; TypeScript
## 211                              Bash/Shell; C; Go; Haskell; HTML/CSS; JavaScript; Julia; SQL; VBA
## 212                              C#; F#; JavaScript; TypeScript
## 222                              Bash/Shell; HTML/CSS; Java; JavaScript; Python; SQL
## 240                              HTML/CSS; JavaScript; Ruby; SQL
##                                DatabaseHaveWorkedWith
## 1                                Couchbase; MariaDB; Microsoft SQL Server; MongoDB; MySQL; PostgreSQL; Redis; SQLite
## 9                                Microsoft SQL Server
## 12                               Microsoft SQL Server; MongoDB

```

```

## 16 Elasticsearch;Firebase;PostgreSQL
## 19 Microsoft SQL Server
## 23 Firebase;MongoDB;MySQL;Redis
## 29 Microsoft SQL Server;PostgreSQL;Redis
## 41 MySQL
## 46 Microsoft SQL Server
## 47 Microsoft SQL Server;Redis
## 56 Cassandra;Elasticsearch;MariaDB;Microsoft SQL Server;MongoDB;MySQL;Oracle;PostgreSQL;SQLite
## 62 MySQL;PostgreSQL;SQLite
## 65 MariaDB;MongoDB;MySQL
## 67 Elasticsearch;Oracle;PostgreSQL
## 74 Firebase;Microsoft SQL Server;Redis;SQLite
## 75 PostgreSQL
## 83 SQLite
## 86 Microsoft SQL Server;MongoDB;PostgreSQL
## 87 Microsoft SQL Server;PostgreSQL;SQLite
## 89 Elasticsearch;MariaDB;Microsoft SQL Server;PostgreSQL;Redis
## 90 Firebase;MariaDB;Microsoft SQL Server;Oracle;SQLite
## 94 MongoDB;MySQL;Redis
## 103 Cassandra;MariaDB;Microsoft SQL Server;MySQL;Redis;SQLite
## 105 Firebase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;SQLite
## 108 Microsoft SQL Server;MongoDB;Redis;SQLite
## 113 Microsoft SQL Server;MongoDB;PostgreSQL;SQLite
## 117 MongoDB
## 119 Firebase;Microsoft SQL Server;MongoDB;MySQL;SQLite
## 123 Firebase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;SQLite
## 135 Cassandra;Elasticsearch;Microsoft SQL Server;MongoDB;PostgreSQL;Redis
## 139 Microsoft SQL Server;MySQL;PostgreSQL
## 144 Microsoft SQL Server;MySQL;PostgreSQL;SQLite
## 150 Firebase;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis
## 152 DynamoDB;Elasticsearch;Microsoft SQL Server;MongoDB;MySQL;Oracle;PostgreSQL;Redis
## 159 MariaDB;MySQL;PostgreSQL;Redis
## 161 Elasticsearch;Microsoft SQL Server;MongoDB;MySQL;Redis
## 170 MariaDB;Microsoft SQL Server;MySQL;Oracle;PostgreSQL
## 173 Microsoft SQL Server
## 175 Elasticsearch;Microsoft SQL Server;PostgreSQL;Redis
## 177 MariaDB;MongoDB;PostgreSQL
## 179 PostgreSQL;Redis
## 202 Elasticsearch;Firebase;MariaDB;MySQL
## 205 Elasticsearch;Microsoft SQL Server;MongoDB;MySQL;Oracle;SQLite
## 206 MongoDB;MySQL;PostgreSQL;Redis
## 211 Microsoft SQL Server;MySQL;PostgreSQL;SQLite
## 212 Microsoft SQL Server;MySQL
## 222 Couchbase;Microsoft SQL Server;Oracle;PostgreSQL;SQLite
## 240 PostgreSQL;Redis
## DatabaseW
## 1 Couchbase;Microsoft SQL Server;MongoDB
## 9 Microsoft SQL S
## 12 Microsoft SQL Server;MongoDB;Postg
## 16
## 19 Elasticsearch;Firebase;Microsoft SQL Server;
## 23 Firebase;MongoD
## 29 Cassandra;Elastic
## 41

```

```

## 46                                                    DynamoDB;
## 47
## 56                                                    Cassandra;DynamoDB;Elasticsearch;Firebase;
## 62                                                    Cassandra;Elasticsearch;
## 65                                                    Elasticsearch;MariaDB;MongoDB;
## 67                                                    Elasticsearch;Pos
## 74                                                    Couchbase;DynamoDB;Elasticsearch;Firebase;Microsoft SQL Server
## 75                                                    DynamoDB;Pos
## 83                                                    MariaDB;MongoDB;MySQL;PostgreSQL
## 86                                                    Elasticsearch;Firebase;Microsoft SQL Server;MongoDB;Pos
## 87                                                    Microsoft SQL Server;PostgreSQL
## 89                                                    Elasticsearch;Pos
## 90                                                    Firebase;Microsoft SQL S
## 94
## 103                                                    MariaDB;Microsoft SQL Server;MySQL
## 105
## 108                                                    Microso
## 113                                                    Firebase;Microsoft SQL S
## 117                                                    Mongol
## 119                                                    Firebase;Microsoft SQL S
## 123 Cassandra;Couchbase;DynamoDB;Elasticsearch;Firebase;IBM DB2;MariaDB;Microsoft SQL Server;MongoDB;
## 135                                                    Firebase;Pos
## 139
## 144                                                    Elasticsearch;
## 150                                                    Elasticsearch;Pos
## 152
## 159                                                    Elasticsearch;MariaDB
## 161                                                    Elasticsearch;Microsoft SQL
## 170                                                    MariaDB;MySQL;Orac
## 173
## 175                                                    Couchbase;DynamoDB;Elasticsearch;Microsoft SQL Server;MongoDB;Pos
## 177                                                    DynamoDB;Elasticsearch;MariaDB;Pos
## 179                                                    Pos
## 202                                                    F
## 205                                                    Microsoft SQL Server;MongoDB;MySQL;
## 206                                                    DynamoDB;Elasticsearch;Mongol
## 211                                                    Elasticsearch;Firebase;PostgreSQL
## 212                                                    Microsoft SQL
## 222                                                    Cassandra;Couchbase;Microsoft SQL Server;Postg
## 240                                                    Pos
##
## PlatformHaveWorkedWith
## 1 AWS;DigitalOcean;Microsoft Azure
## 9 Microsoft Azure
## 12 Microsoft Azure
## 16 AWS
## 19 Microsoft Azure
## 23 AWS;Heroku;Microsoft Azure
## 29 Microsoft Azure
## 41 Microsoft Azure
## 46 Heroku;Microsoft Azure
## 47 AWS
## 56 AWS
## 62 AWS;Google Cloud Platform
## 65 Google Cloud Platform

```

```

## 67 AWS
## 74 AWS;Google Cloud Platform;Microsoft Azure
## 75 AWS
## 83 AWS;Google Cloud Platform;Microsoft Azure
## 86 Microsoft Azure
## 87 Microsoft Azure
## 89 Microsoft Azure
## 90 AWS;Google Cloud Platform
## 94 DigitalOcean;Heroku
## 103 Microsoft Azure
## 105 Google Cloud Platform
## 108 Microsoft Azure
## 113 AWS;Microsoft Azure
## 117 AWS;DigitalOcean;Google Cloud Platform;Heroku
## 119 Heroku
## 123 AWS;Google Cloud Platform;Microsoft Azure
## 135 AWS;Microsoft Azure
## 139 Microsoft Azure;Oracle Cloud Infrastructure
## 144 Microsoft Azure
## 150 AWS;Google Cloud Platform;Heroku
## 152 AWS;DigitalOcean;Google Cloud Platform;Heroku
## 159 AWS;DigitalOcean
## 161 AWS;Heroku;Microsoft Azure
## 170 AWS;Google Cloud Platform;Microsoft Azure
## 173 Microsoft Azure
## 175 Microsoft Azure
## 177 AWS;Heroku
## 179 AWS
## 202 Google Cloud Platform
## 205 AWS;Google Cloud Platform;Microsoft Azure
## 206 AWS;Google Cloud Platform
## 211 DigitalOcean;Google Cloud Platform;Heroku
## 212 Microsoft Azure
## 222 IBM Cloud or Watson;Microsoft Azure
## 240 AWS
## PlatformWantToWorkWith
## 1 DigitalOcean
## 9 AWS;Google Cloud Platform;Microsoft Azure
## 12 Microsoft Azure
## 16
## 19 AWS;Google Cloud Platform;Microsoft Azure
## 23 AWS;Google Cloud Platform;Microsoft Azure
## 29 Microsoft Azure
## 41 Microsoft Azure
## 46
## 47 AWS;Microsoft Azure
## 56
## 62 Google Cloud Platform
## 65 AWS;Google Cloud Platform
## 67
## 74 AWS;Google Cloud Platform;Microsoft Azure
## 75
## 83 AWS;Google Cloud Platform;Microsoft Azure
## 86 Microsoft Azure

```

```

## 87 Microsoft
## 89 Microsoft
## 90 Google Cloud Platform;Microsoft
## 94 AWS;Microsoft
## 103 Microsoft
## 105 AWS;Google Cloud Pl
## 108 Microsoft
## 113 Google Cloud Pl
## 117 Google Cloud Pl
## 119 Heroku;Microsoft
## 123 AWS;DigitalOcean;Heroku;Microsoft
## 135 AWS;
## 139 Microsoft
## 144 AWS;Google Cloud Pl
## 150 Digita
## 152 AWS;DigitalOcean;Google Cloud Platform;
## 159
## 161 AWS;Microsoft
## 170 AWS;Google Cloud Platform;Microsoft
## 173 DigitalOcean;Google Cloud Platform;
## 175 AWS;DigitalOcean;Heroku;Microsoft
## 177 AWS;Digita
## 179
## 202 Google Cloud Pl
## 205 AWS;DigitalOcean;Google Cloud Platform;IBM Cloud or Watson;Microsoft Azure;Oracle Cloud Infrastr
## 206 AWS;Google Cloud Pl
## 211
## 212 Microsoft
## 222 IBM Cloud or Watson;Microsoft
## 240
## WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 9 ASP.NET;ASP.NET Core ;jQuery
## 12 Angular;Angular.js;ASP.NET;jQuery;React.js
## 16 Vue.js
## 19 ASP.NET;ASP.NET Core
## 23 Angular;Angular.js;ASP.NET Core ;Express;jQuery;Vue.js
## 29 Angular.js;ASP.NET;ASP.NET Core ;Express
## 41 ASP.NET;ASP.NET Core
## 46 ASP.NET;ASP.NET Core ;jQuery
## 47 Spring;Vue.js
## 56 Angular;Angular.js;ASP.NET;ASP.NET Core ;Drupal;jQuery;React.js;Spring;Symfony;Vue.js
## 62 Django
## 65 React.js;Spring
## 67 Django;Flask;Vue.js
## 74 Angular;Angular.js;ASP.NET;ASP.NET Core ;jQuery
## 75 Flask;React.js
## 83 Django;Flask;Laravel;React.js;Symfony
## 86 Angular;ASP.NET;ASP.NET Core ;Flask
## 87 Angular;ASP.NET;ASP.NET Core ;jQuery;React.js
## 89 Angular;ASP.NET Core ;jQuery;React.js
## 90 ASP.NET;jQuery
## 94 React.js
## 103 ASP.NET;ASP.NET Core ;jQuery;React.js

```

```

## 105 Express;FastAPI;Flask;Laravel;Spring
## 108 ASP.NET Core ;Django;Flask;jQuery;React.js
## 113 Angular;ASP.NET;ASP.NET Core ;jQuery
## 117 Express;jQuery;React.js;Vue.js
## 119 Angular;ASP.NET;ASP.NET Core ;Express;jQuery;React.js
## 123 Angular.js;Drupal;Express;Gatsby;jQuery;React.js;Ruby on Rails
## 135 Angular;ASP.NET Core ;jQuery;Laravel;Spring;Symfony;Vue.js
## 139 Angular;ASP.NET;ASP.NET Core
## 144 Flask
## 150 Express;React.js
## 152 Angular;Express;Gatsby;React.js
## 159 Drupal;jQuery;Laravel;React.js;Symfony;Vue.js
## 161 ASP.NET;ASP.NET Core ;jQuery;Vue.js
## 170 Angular;Angular.js;jQuery;Spring
## 173 ASP.NET;ASP.NET Core ;jQuery;React.js
## 175 ASP.NET;ASP.NET Core
## 177 Angular;Express
## 179 ASP.NET;ASP.NET Core
## 202 jQuery;React.js
## 205 ASP.NET;ASP.NET Core ;jQuery
## 206 Flask;Gatsby;Spring
## 211 Angular;Django;FastAPI;Flask;jQuery;React.js
## 212 Angular;ASP.NET Core
## 222 Angular;Angular.js;Django;Flask;jQuery
## 240 jQuery;Ruby on Rails
## WebframeWantToWorkWith
## 1 Angular;Express;Gatsby;React.js;Svelte
## 9 ASP.NET;ASP.NET Core ;jQuery
## 12 Angular;ASP.NET Core ;React.js;Vue.js
## 16 Vue.js
## 19 ASP.NET;ASP.NET Core
## 23 Angular;ASP.NET Core ;Express
## 29 React.js
## 41 ASP.NET;ASP.NET Core
## 46 Angular;Angular.js;Vue.js
## 47 Flask;Spring;Vue.js
## 56 React.js;Spring;Vue.js
## 62 FastAPI
## 65 React.js;Ruby on Rails;Spring
## 67 Django;Flask;Vue.js
## 74 Angular;ASP.NET Core
## 75 React.js
## 83 Django;Flask;Laravel;React.js;Symfony
## 86 Angular;ASP.NET Core ;Flask
## 87 Angular;ASP.NET Core ;Express;React.js;Svelte;Vue.js
## 89 Angular;ASP.NET Core
## 90 ASP.NET Core ;jQuery;Vue.js
## 94 Express;React.js
## 103 ASP.NET;ASP.NET Core ;React.js
## 105 Gatsby;Laravel;Svelte;Vue.js
## 108 ASP.NET Core ;React.js
## 113 ASP.NET;ASP.NET Core ;jQuery;React.js
## 117 Express;React.js;Vue.js
## 119 Angular;ASP.NET Core ;Django;Express;React.js

```



```

## 123 FastAPI;Gatsby;React.js;Ruby on Rails;Svelte;Vue.js
## 135     ASP.NET Core ;Laravel;Symfony;Vue.js
## 139         Angular;ASP.NET Core
## 144         Angular.js;ASP.NET;Django
## 150             Gatsby;Ruby on Rails
## 152             Angular;Express;Gatsby;React.js
## 159     Drupal;Laravel;React.js;Symfony;Vue.js
## 161     ASP.NET;ASP.NET Core ;Spring;Vue.js
## 170     Angular;Angular.js;jQuery;Spring
## 173     ASP.NET Core ;React.js
## 175     ASP.NET;ASP.NET Core
## 177     Express;Gatsby;React.js
## 179     ASP.NET;ASP.NET Core
## 202         React.js
## 205     ASP.NET;ASP.NET Core ;Django;jQuery;React.js
## 206         FastAPI;Svelte
## 211         FastAPI;React.js
## 212     Angular;ASP.NET Core
## 222         Django;Flask
## 240         jQuery;Ruby on Rails
##
## 1
## 9
## 12
## 16
## 19
## 23
## 29
## 41
## 46
## 47
## 56
## 62
## 65
## 67
## 74
## 75
## 83
## 86
## 87
## 89
## 90
## 94
## 103
## 105
## 108
## 113
## 117
## 119
## 123
## 135
## 139
## 144
## 150

```

MiscTechHaveWorkedWith

```

.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework
Cordova;Flutter
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5;Apache Spark
Flutter
React Native
NumPy;Pandas
.NET Framework;.NET Core / .NET 5
NumPy;Torch/PyTorch
Keras;NumPy;Pandas;React Native;TensorFlow;Torch/PyTorch
.NET Framework;.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5
React Native
.NET Framework;.NET Core / .NET 5
Flutter
.NET Core / .NET 5
.NET Framework;.NET Core / .NET 5;Cordova;Qt
React Native
.NET Framework;.NET Core / .NET 5
Cordova;TensorFlow
.NET Framework;.NET Core / .NET 5;Hadoop
.NET Framework;.NET Core / .NET 5
.NET Core / .NET 5;Apache Spark;Keras;NumPy;Pandas;TensorFlow
Flutter;Keras;NumPy;Pandas;React Native;TensorFlow

```

```

## 152 .NET Framework;NumPy;Pandas;React Native
## 159 Keras;NumPy;Pandas;Qt;TensorFlow
## 161 .NET Framework;.NET Core / .NET 5
## 170 Apache Spark;Hadoop
## 173 .NET Framework;.NET Core / .NET 5
## 175 .NET Framework;.NET Core / .NET 5
## 177 React Native
## 179 .NET Framework;.NET Core / .NET 5
## 202 Flutter;Keras;NumPy;TensorFlow;Torch/PyTorch
## 205 .NET Framework;.NET Core / .NET 5;Hadoop;Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 206 NumPy;Pandas
## 211 NumPy;Pandas
## 212 .NET Framework;.NET Core / .NET 5
## 222 .NET Framework;.NET Core / .NET 5;Apache Spark;Cordova;Hadoop;Keras;NumPy;Pandas;Torch/PyTorch
## 240 Cordova
## MiscTechWantToWorkWith
## 1 Hadoop;React Native
## 9 .NET Framework;.NET Core / .NET 5
## 12 .NET Core / .NET 5
## 16 Flutter
## 19 .NET Framework;.NET Core / .NET 5;Cordova;Flutter;Hadoop;TensorFlow
## 23 .NET Core / .NET 5
## 29 Apache Spark;Hadoop;Keras;NumPy;Pandas;TensorFlow
## 41 .NET Framework;.NET Core / .NET 5
## 46 Apache Spark;Hadoop
## 47 Apache Spark;Hadoop;React Native
## 56 Apache Spark
## 62 Flutter
## 65 React Native
## 67 NumPy;Pandas
## 74 .NET Core / .NET 5
## 75 NumPy;Torch/PyTorch
## 83 Keras;NumPy;Pandas;Qt;React Native;TensorFlow;Torch/PyTorch
## 86 .NET Framework;.NET Core / .NET 5
## 87 .NET Core / .NET 5
## 89 .NET Core / .NET 5
## 90 Qt;React Native;TensorFlow
## 94 .NET Core / .NET 5
## 103 .NET Framework;.NET Core / .NET 5
## 105 Flutter;TensorFlow;Torch/PyTorch
## 108 .NET Core / .NET 5
## 113 .NET Framework;.NET Core / .NET 5
## 117 React Native
## 119 .NET Core / .NET 5
## 123 Apache Spark;Flutter;Keras;React Native;TensorFlow
## 135 .NET Core / .NET 5
## 139 .NET Core / .NET 5
## 144 .NET Core / .NET 5;Apache Spark;Hadoop;Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 150 React Native
## 152 NumPy;Pandas;React Native;TensorFlow
## 159 Keras;NumPy;Pandas;Qt;TensorFlow
## 161 .NET Framework;.NET Core / .NET 5
## 170 Apache Spark;Hadoop
## 173 .NET Core / .NET 5;Flutter;React Native

```

```

## 175 .NET Framework;.NET Core / .NET 5
## 177 React Native;TensorFlow;Torch/PyTorch
## 179 .NET Framework;.NET Core / .NET 5
## 202 Flutter;TensorFlow
## 205 .NET Framework;.NET Core / .NET 5;Hadoop;Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 206 TensorFlow
## 211 NumPy;Pandas
## 212 .NET Framework;.NET Core / .NET 5
## 222 Apache Spark;Cordova;Hadoop;Keras;NumPy;Pandas;TensorFlow;Torch/PyTorch
## 240 Cordova
## ToolsTechHaveWorkedWith
## 1 Docker;Kubernetes
## 9 Git;Unity 3D
## 12 Git;Yarn
## 16 Docker;Git
## 19 Xamarin
## 23 Docker;Git
## 29 Ansible;Docker;Git
## 41 Git;Xamarin
## 46 Git
## 47 Docker;Git
## 56 Docker;Git;Yarn
## 62 Docker;Git
## 65 Docker;Git;Kubernetes
## 67 Docker;Git
## 74 Git
## 75 Git
## 83 Docker;Git;Kubernetes
## 86 Git;Xamarin
## 87 Git
## 89 Docker;Kubernetes
## 90 Git
## 94 Git
## 103 Docker;Git;Kubernetes
## 105 Docker;Git
## 108 Docker;Git;Kubernetes
## 113 Xamarin
## 117 Docker;Git;Yarn
## 119 Git
## 123 Docker;Git;Yarn
## 135 Docker;Git
## 139 Ansible;Docker;Git;Yarn
## 144 Ansible;Docker;Git
## 150 Docker;Git;Kubernetes;Yarn
## 152 Docker
## 159 Git
## 161 Docker
## 170 Ansible;Docker;Git
## 173 Git
## 175 Docker;Git
## 177 Docker;Git
## 179 Docker;Flow;Git
## 202 Git;Unity 3D
## 205 Git;Kubernetes;Unity 3D;Unreal Engine

```

```

## 206                Docker;Git
## 211        Docker;Git;Kubernetes
## 212                Git
## 222        Docker;Git;Kubernetes
## 240                Git
##
##                                ToolsTechWantToWorkWith
## 1                                Docker;Terraform
## 9                                Docker;Git
## 12                               Docker;Git;Yarn
## 16                               Docker;Git
## 19                               Git;Kubernetes;Xamarin
## 23                               Docker;Git;Kubernetes
## 29                               Unity 3D;Unreal Engine
## 41                               Git;Xamarin
## 46                               Docker;Kubernetes;Xamarin
## 47        Ansible;Docker;Git;Kubernetes;Puppet;Terraform;Yarn
## 56                               Ansible;Docker;Terraform;Yarn
## 62                               Docker
## 65                               Docker;Flow;Git;Kubernetes;Yarn
## 67                               Docker;Git;Terraform
## 74                               Git
## 75                               Git
## 83        Deno;Docker;Git;Kubernetes;Terraform;Unreal Engine;Yarn
## 86                               Git;Xamarin
## 87                               Docker;Git;Kubernetes
## 89                               Docker;Kubernetes;Unity 3D;Unreal Engine
## 90                               Docker;Kubernetes
## 94                               Docker
## 103                              Docker;Git;Kubernetes
## 105                              Ansible;Docker;Git
## 108                              Git
## 113                              Unity 3D;Unreal Engine
## 117                              Git;Yarn
## 119                              Docker;Git;Kubernetes
## 123                              Docker;Git;Kubernetes
## 135                              Docker;Git;Kubernetes;Terraform
## 139        Ansible;Docker;Git;Kubernetes;Xamarin;Yarn
## 144        Ansible;Docker;Kubernetes;Terraform
## 150        Docker;Git;Kubernetes;Unreal Engine;Yarn
## 152                              Docker
## 159                              Git
## 161                              Docker;Kubernetes
## 170        Ansible;Docker;Git;Kubernetes
## 173        Deno;Flow;Git;Kubernetes
## 175                              Docker;Git
## 177                              Docker;Git
## 179                              Docker;Flow;Git
## 202        Deno;Docker;Git;Kubernetes;Unity 3D
## 205 Git;Kubernetes;Pulumi;Puppet;Terraform;Unity 3D;Unreal Engine;Xamarin;Yarn
## 206        Deno;Docker;Git;Kubernetes;Terraform
## 211        Docker;Git;Kubernetes
## 212        Git
## 222        Docker;Git;Kubernetes
## 240        Git

```

```

##
## 1 Notepad++;Visu
## 9 Visu
## 12 Atom;Visu
## 16
## 19 Visu
## 23 Visu
## 29 IntelliJ;PyCharm
## 41
## 46 Visu
## 47 Android Studio;Eclipse;IntelliJ;PyCharm;Visu
## 56 IntelliJ;Sul
## 62
## 65
## 67 NetBeans;Notepad++;P
## 74 Android Studio;Notepad++;Visu
## 75 Andro
## 83 Emacs;IntelliJ;IPython,
## 86 Notepad++;Visu
## 87 Visu
## 89 IntelliJ;Notepad++;Rider;Vim;Visual Studio
## 90 Android S
## 94 Android Studio;PHPStorm;Visual Studio;Visu
## 103 Notepad++;Visu
## 105 Android Studio;IntelliJ
## 108 IntelliJ;IPython/Jupyter;PyCharm
## 113 Android Studio;Eclipse;Notepad++;Visu
## 117 Android Studio;Visu
## 119 Android Studio;Atom;Eclipse;IntelliJ;NetBeans;Notepad++;PyCharm;Sublime Text;Vim;Visu
## 123 Android Studio;Neovim;Notepad++;PHPStorm;Vim;Visual Studio
## 135 IntelliJ;PHPStorm;Ride
## 139 Visu
## 144 IPython/Jupyter;Sublime Text;Visu
## 150 Android Studio;Atom;Eclipse;IPython/Jupyter;Vim;Visu
## 152 RStudio;Visu
## 159 Andro
## 161 IntelliJ;Notepad++;Visu
## 170 Android Studio;Eclipse;Intell
## 173 Not
## 175 Notepad++;Visu
## 177
## 179 Visu
## 202
## 205 Android Studio;Atom;Eclipse;IntelliJ;IPython/Jupyter;NetBeans;Notepad++;PyCharm;TextMate;Vim;Visu
## 206 IntelliJ;PyCharm
## 211
## 212 Eclipse;Notepad++;Visu
## 222 Emacs;IPyth
## 240
##
## 1
## 9
## 12
## 16

```

```

## 19
## 23
## 29
## 41
## 46
## 47
## 56
## 62
## 65
## 67
## 74
## 75
## 83
## 86
## 87
## 89
## 90
## 94
## 103
## 105
## 108
## 113
## 117
## 119
## 123
## 135
## 139
## 144
## 150
## 152
## 159
## 161
## 170
## 173
## 175
## 177
## 179
## 202
## 205
## 206
## 211
## 212
## 222
## 240
##
##      OpSys
## 1      Windows
## 9      Windows
## 12     Linux-based
## 16     Windows
## 19     Windows
## 23     Windows
## 29     Linux-based
## 41     Windows
## 46     Windows

```

```

## 47          Linux-based
## 56          Linux-based
## 62  Windows Subsystem for Linux (WSL)
## 65          MacOS
## 67          Linux-based
## 74          Windows
## 75          Linux-based
## 83          Linux-based
## 86          Windows
## 87          Windows
## 89          Windows
## 90          Windows
## 94          Windows
## 103         Windows
## 105         Windows
## 108         Windows
## 113         Windows
## 117         MacOS
## 119         Windows
## 123 Windows Subsystem for Linux (WSL)
## 135         MacOS
## 139         Windows
## 144         Linux-based
## 150         Windows
## 152         MacOS
## 159         MacOS
## 161         MacOS
## 170         Linux-based
## 173         Windows
## 175         Windows
## 177         Windows
## 179         Windows
## 202         Windows
## 205         Windows
## 206         MacOS
## 211 Windows Subsystem for Linux (WSL)
## 212         Windows
## 222         Linux-based
## 240         Linux-based
##
## 1
## 9
## 12
## 16
## 19
## 23
## 29
## 41
## 46
## 47
## 56
## 62
## 65
## 67

```

Call a

Call a

V.

Call a coworker or friend; Visit St

```

## 74
## 75
## 83
## 86 Call a coworker or friend;Visit
## 87 Call a
## 89
## 90 Ca
## 94
## 103
## 105
## 108 Call a coworker or
## 113
## 117 Ca
## 119
## 123 Visit Stack Overflow;Go f
## 135
## 139
## 144 Ca
## 150
## 152
## 159
## 161 Call a
## 170
## 173
## 175 Visit Stack
## 177
## 179
## 202
## 205 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google i
## 206
## 211 Visit
## 212 Call a coworker or friend;Visit Stack
## 222
## 240
##
## 1 Stack
## 9 Stack
## 12 Stack
## 16 Stack
## 19 Stack
## 23
## 29
## 41
## 46 Stack
## 47 Stack
## 56 Stack
## 62 Stack
## 65 Stack
## 67 Stack
## 74 Stack
## 75 Stack
## 83 Stack
## 86 Stack Overflow;Stack Exchange;Stack Overflow for Teams (private knowledge sharing & collaboration
## 87 Stack

```


## 89		Stack
## 90		
## 94		Stack
## 103		Stack
## 105		Stack
## 108		Stack
## 113		
## 117		Stack
## 119	Stack Overflow;Stack Exchange;Stack Overflow for Teams (private knowledge sharing & collaboration	
## 123		Stack
## 135		Stack
## 139		Stack
## 144		Stack
## 150		Stack
## 152		Stack
## 159		Stack
## 161		
## 170		Stack
## 173		Stack
## 175		
## 177		Stack
## 179		Stack
## 202		Stack
## 205		Stack
## 206		Stack
## 211		Stack
## 212		Stack
## 222		Stack
## 240		Stack
##	SOVisitFreq SOAccount	
## 1	Multiple times per day	Yes
## 9	A few times per week	Yes
## 12	Daily or almost daily	Yes
## 16	A few times per month or weekly	Yes
## 19	A few times per week	Yes
## 23	Daily or almost daily	Yes
## 29	Daily or almost daily	Yes
## 41	Daily or almost daily	Yes
## 46	A few times per week	Yes
## 47	Daily or almost daily	Yes
## 56	Daily or almost daily	Yes
## 62	Daily or almost daily	Yes
## 65	A few times per week	Yes
## 67	Multiple times per day	Yes
## 74	Multiple times per day	Yes
## 75	Multiple times per day	Yes
## 83	Daily or almost daily	Yes
## 86	Daily or almost daily	Yes
## 87	Daily or almost daily	Yes
## 89	A few times per week	Yes
## 90	Multiple times per day	Yes
## 94	Multiple times per day	Yes
## 103	A few times per week	Yes
## 105	A few times per week	Yes

## 108	Daily or almost daily	Yes
## 113	A few times per month or weekly	Yes
## 117	A few times per week	Yes
## 119	Multiple times per day	Yes
## 123	Multiple times per day	Yes
## 135	Multiple times per day	Yes
## 139	Daily or almost daily	Yes
## 144	Multiple times per day	Yes
## 150	Multiple times per day	Yes
## 152	Daily or almost daily	Yes
## 159	Daily or almost daily	Yes
## 161	Daily or almost daily	Yes
## 170	A few times per week	Yes
## 173	Multiple times per day	Yes
## 175	A few times per week	Yes
## 177	A few times per week	Yes
## 179	Daily or almost daily	Yes
## 202	Daily or almost daily	Yes
## 205	Daily or almost daily	Yes
## 206	A few times per week	Yes
## 211	Daily or almost daily	Yes
## 212	A few times per month or weekly	Yes
## 222	Multiple times per day	Yes
## 240	Multiple times per day	Yes
##	SOPartFreq	SOCComm
## 1	A few times per week	Yes, definitely
## 9	I have never participated in Q&A on Stack Overflow	No, not really
## 12	Less than once per month or monthly	Neutral
## 16	Less than once per month or monthly	No, not at all
## 19	Less than once per month or monthly	Neutral
## 23	A few times per month or weekly	Yes, somewhat
## 29	A few times per month or weekly	Yes, somewhat
## 41	A few times per month or weekly	Yes, definitely
## 46	Less than once per month or monthly	Neutral
## 47	I have never participated in Q&A on Stack Overflow	Not sure
## 56	I have never participated in Q&A on Stack Overflow	Yes, somewhat
## 62	Less than once per month or monthly	Yes, definitely
## 65	Less than once per month or monthly	Yes, somewhat
## 67	Daily or almost daily	Yes, definitely
## 74	I have never participated in Q&A on Stack Overflow	No, not really
## 75	Less than once per month or monthly	Neutral
## 83	Less than once per month or monthly	Neutral
## 86	Less than once per month or monthly	Yes, somewhat
## 87	Less than once per month or monthly	No, not really
## 89	A few times per month or weekly	Yes, somewhat
## 90	Less than once per month or monthly	No, not really
## 94	Less than once per month or monthly	Yes, somewhat
## 103	Less than once per month or monthly	Yes, somewhat
## 105	A few times per month or weekly	Yes, somewhat
## 108	A few times per month or weekly	Neutral
## 113	I have never participated in Q&A on Stack Overflow	No, not really
## 117	Less than once per month or monthly	No, not really
## 119	Less than once per month or monthly	Yes, somewhat
## 123	I have never participated in Q&A on Stack Overflow	Yes, somewhat

## 135	Less than once per month or monthly	Neutral
## 139	Less than once per month or monthly	No, not really
## 144	Daily or almost daily	Yes, somewhat
## 150	I have never participated in Q&A on Stack Overflow	Yes, definitely
## 152	Less than once per month or monthly	No, not really
## 159	A few times per month or weekly	Yes, definitely
## 161	Less than once per month or monthly	Neutral
## 170	Less than once per month or monthly	Yes, somewhat
## 173	Less than once per month or monthly	Yes, somewhat
## 175	Less than once per month or monthly	Neutral
## 177	I have never participated in Q&A on Stack Overflow	No, not really
## 179	I have never participated in Q&A on Stack Overflow	No, not really
## 202	I have never participated in Q&A on Stack Overflow	No, not really
## 205	Less than once per month or monthly	Yes, definitely
## 206	Less than once per month or monthly	Neutral
## 211	A few times per month or weekly	Yes, somewhat
## 212	I have never participated in Q&A on Stack Overflow	Yes, somewhat
## 222	Less than once per month or monthly	Neutral
## 240	Less than once per month or monthly	Yes, somewhat
##	NEWOtherComms	Age
## 1	Yes	25-34 years old
## 9	No	25-34 years old
## 12	No	25-34 years old
## 16	Yes	35-44 years old
## 19	Yes	25-34 years old
## 23	Yes	25-34 years old
## 29	No	25-34 years old
## 41	Yes	25-34 years old
## 46	No	35-44 years old
## 47	No	18-24 years old
## 56	No	25-34 years old
## 62	No	25-34 years old
## 65	Yes	35-44 years old
## 67	No	35-44 years old
## 74	No	25-34 years old
## 75	No	18-24 years old
## 83	No	35-44 years old
## 86	Yes	25-34 years old
## 87	Yes	25-34 years old
## 89	No	35-44 years old
## 90	Yes	35-44 years old
## 94	No	25-34 years old
## 103	No	35-44 years old
## 105	Yes	25-34 years old
## 108	Yes	35-44 years old
## 113	No	35-44 years old
## 117	Yes	25-34 years old
## 119	No	35-44 years old
## 123	Yes	35-44 years old
## 135	Yes	25-34 years old
## 139	No	25-34 years old
## 144	No	25-34 years old
## 150	Yes	18-24 years old
## 152	No	35-44 years old

	Gender	Trans
## 1	Man	No
## 9	Woman	No
## 12	Man	No
## 16	Man	No
## 19	Man	No
## 23	Man	No
## 29	Man	No
## 41	Man	No
## 46	Man;Woman	No
## 47	Man	No
## 56	Man	No
## 62	Prefer not to say	No
## 65	Man	No
## 67	Man	No
## 74	Man	No
## 75	Man	No
## 83	Man	No
## 86	Man	No
## 87	Man	No
## 89	Man	No
## 90	Man	No
## 94	Man	No
## 103	Man	No
## 105	Man	No
## 108	Man	No
## 113	Man	No
## 117	Man	No
## 119	Man	No
## 123	Man	No
## 135	Man	No
## 139	Man	No
## 144	Man	No
## 150	Man	No
## 152	Man	No

## 159	No 25-34 years old	Man	No
## 161	No 35-44 years old	Man	No
## 170	No 35-44 years old	Man	No
## 173	No 25-34 years old	Woman	No
## 175	Yes 25-34 years old	Man	No
## 177	No 25-34 years old	Man	No
## 179	Yes 25-34 years old	Man	No
## 202	No 25-34 years old	Man	No
## 205	Yes 25-34 years old	Man	No
## 206	Yes 25-34 years old	Man	No
## 211	Yes 25-34 years old	Man	No
## 212	No 45-54 years old	Prefer not to say	Prefer not to say
## 222	Yes 18-24 years old	Man	No
## 240	Yes 25-34 years old	Man	No
##	Sexuality		
## 1	Straight / Heterosexual		
## 9	Straight / Heterosexual		
## 12	Straight / Heterosexual		
## 16	Straight / Heterosexual		
## 19	Straight / Heterosexual		
## 23	Straight / Heterosexual		
## 29	Straight / Heterosexual		
## 41	Prefer not to say		
## 46	Straight / Heterosexual		
## 47	Straight / Heterosexual		
## 56	Prefer not to say		
## 62	Prefer not to say		
## 65	Straight / Heterosexual		
## 67	Straight / Heterosexual		
## 74	Straight / Heterosexual		
## 75	Straight / Heterosexual		
## 83	Straight / Heterosexual		
## 86	Straight / Heterosexual		
## 87	Straight / Heterosexual		
## 89	Straight / Heterosexual		
## 90	Straight / Heterosexual		
## 94	Straight / Heterosexual		
## 103	Straight / Heterosexual		
## 105	Straight / Heterosexual		
## 108	Straight / Heterosexual		
## 113	Straight / Heterosexual		
## 117	Straight / Heterosexual		
## 119	Prefer to self-describe:		
## 123	Straight / Heterosexual		
## 135	Prefer to self-describe:		
## 139	Straight / Heterosexual		
## 144	Straight / Heterosexual		
## 150	Straight / Heterosexual		
## 152	Straight / Heterosexual		
## 159	Straight / Heterosexual		
## 161	Straight / Heterosexual		
## 170	Straight / Heterosexual		
## 173	Straight / Heterosexual		
## 175	Straight / Heterosexual		

## 177	Straight / Heterosexual		
## 179	Straight / Heterosexual		
## 202	Straight / Heterosexual		
## 205	Straight / Heterosexual		
## 206	Straight / Heterosexual		
## 211	Prefer not to say		
## 212	Prefer not to say		
## 222	Straight / Heterosexual		
## 240	Straight / Heterosexual		
##		Ethnicity	Accessibility
## 1		White or of European descent	None of the above
## 9		White or of European descent	None of the above
## 12		White or of European descent	None of the above
## 16		White or of European descent	None of the above
## 19		White or of European descent	None of the above
## 23		White or of European descent	None of the above
## 29		White or of European descent	None of the above
## 41		Prefer not to say	Prefer not to say
## 46		White or of European descent	None of the above
## 47		White or of European descent	None of the above
## 56		White or of European descent	None of the above
## 62		White or of European descent	None of the above
## 65		Or, in your own words:	None of the above
## 67		White or of European descent	None of the above
## 74		White or of European descent	None of the above
## 75		White or of European descent	None of the above
## 83		White or of European descent	None of the above
## 86		White or of European descent	None of the above
## 87		White or of European descent	None of the above
## 89		White or of European descent	None of the above
## 90		White or of European descent	None of the above
## 94		White or of European descent	None of the above
## 103		White or of European descent	None of the above
## 105		White or of European descent	None of the above
## 108		White or of European descent	None of the above
## 113	White or of European descent;	Or, in your own words:	None of the above
## 117		Hispanic or Latino/a/x	None of the above
## 119		White or of European descent	None of the above
## 123		White or of European descent	None of the above
## 135		White or of European descent	None of the above
## 139		White or of European descent	None of the above
## 144		White or of European descent	None of the above
## 150		White or of European descent	None of the above
## 152		White or of European descent	None of the above
## 159		White or of European descent	None of the above
## 161		White or of European descent	None of the above
## 170		White or of European descent	None of the above
## 173		White or of European descent	None of the above
## 175		White or of European descent	None of the above
## 177		White or of European descent	None of the above
## 179		White or of European descent	None of the above
## 202		White or of European descent	None of the above
## 205		White or of European descent	None of the above
## 206		White or of European descent	None of the above

```

## 211           White or of European descent None of the above
## 212           Prefer not to say None of the above
## 222           White or of European descent None of the above
## 240           White or of European descent None of the above
##
## 1
## 9
## 12
## 16
## 19
## 23
## 29
## 41
## 46
## 47
## 56
## 62 I have a concentration and/or memory disorder (e.g. ADHD);I have a mood or emotional disorder (e
## 65
## 67
## 74
## 75
## 83
## 86
## 87
## 89
## 90
## 94
## 103
## 105
## 108
## 113
## 117
## 119
## 123 I have a concentration and/or memory disorder (e.g. ADHD);I have a mood or emotional disorder (e
## 135           I have a mood or emotional disorder (e
## 139
## 144
## 150
## 152
## 159
## 161
## 170
## 173
## 175
## 177
## 179
## 202
## 205
## 206
## 211
## 212
## 222
## 240
##
##           SurveyLength           SurveyEase ConvertedCompYearly

```

## 1	Appropriate in length	Easy	25944
## 9	Appropriate in length	Easy	8436
## 12	Appropriate in length	Neither easy nor difficult	19452
## 16	Appropriate in length	Easy	32424
## 19	Appropriate in length	Easy	25944
## 23	Too short	Easy	38916
## 29	Appropriate in length	Neither easy nor difficult	26484
## 41	Appropriate in length	Easy	16860
## 46	Appropriate in length	Easy	12972
## 47	Appropriate in length	Easy	16860
## 56	Appropriate in length	Easy	32538
## 62	Appropriate in length	Easy	48644
## 65	Appropriate in length	Easy	30267
## 67	Appropriate in length	Easy	39131
## 74	Too short	Easy	48050
## 75	Appropriate in length	Easy	48644
## 83	Appropriate in length	Easy	64859
## 86	Appropriate in length	Easy	69183
## 87	Appropriate in length	Easy	11676
## 89	Appropriate in length	Easy	49941
## 90	Appropriate in length	Easy	38213
## 94	Appropriate in length	Easy	17508
## 103	Appropriate in length	Easy	37834
## 105	Appropriate in length	Neither easy nor difficult	22704
## 108	Appropriate in length	Easy	45780
## 113	Appropriate in length	Easy	25944
## 117	Appropriate in length	Neither easy nor difficult	77831
## 119	Appropriate in length	Easy	15564
## 123	Appropriate in length	Easy	12972
## 135	Appropriate in length	Easy	41077
## 139	Appropriate in length	Easy	41077
## 144	Appropriate in length	Easy	20760
## 150	Appropriate in length	Neither easy nor difficult	12972
## 152	Appropriate in length	Easy	52968
## 159	Appropriate in length	Easy	27025
## 161	Too long	Easy	49944
## 170	Appropriate in length	Easy	75669
## 173	Appropriate in length	Easy	20760
## 175	Appropriate in length	Easy	16860
## 177	Appropriate in length	Easy	8436
## 179	Appropriate in length	Easy	12972
## 202	Appropriate in length	Easy	10572
## 205	Appropriate in length	Easy	12972
## 206	Appropriate in length	Easy	43239
## 211	Appropriate in length	Easy	35028
## 212	Appropriate in length	Easy	32424
## 222	Appropriate in length	Easy	18156
## 240	Appropriate in length	Easy	22000

##	lang_work
## 1	C# HTML/CSS JavaScript Node.js PowerShell TypeScript VBA
## 9	C# HTML/CSS JavaScript PowerShell
## 12	C# HTML/CSS JavaScript Node.js
## 16	Bash/Shell Dart HTML/CSS Java JavaScript SQL
## 19	C# SQL VBA

```

## 23          C# HTML/CSS JavaScript Node.js PowerShell SQL TypeScript
## 29      C# Java JavaScript LISP Node.js PowerShell Python SQL TypeScript VBA
## 41          C# SQL
## 46          Assembly C C# SQL
## 47          Java JavaScript Python SQL
## 56      C# HTML/CSS Java JavaScript PHP Python SQL TypeScript
## 62          Dart Python
## 65          Java JavaScript Node.js TypeScript
## 67          Bash/Shell Python SQL
## 74      C# HTML/CSS JavaScript SQL TypeScript
## 75          Assembly Python
## 83          Assembly Bash/Shell C Go Perl Python
## 86      C# HTML/CSS JavaScript Node.js PowerShell Python TypeScript
## 87          C# HTML/CSS JavaScript Python SQL TypeScript VBA
## 89      Bash/Shell C# HTML/CSS Java JavaScript Node.js PHP SQL TypeScript
## 90          C# HTML/CSS Java JavaScript SQL VBA
## 94          HTML/CSS JavaScript
## 103         C# C++ HTML/CSS JavaScript Node.js PHP SQL VBA
## 105      Dart Go HTML/CSS Java JavaScript Kotlin Node.js PHP Python SQL
## 108         C# HTML/CSS JavaScript Python SQL
## 113         C# HTML/CSS Java JavaScript Node.js SQL VBA
## 117         Java JavaScript Node.js TypeScript
## 119         C# HTML/CSS JavaScript Node.js SQL TypeScript
## 123      Bash/Shell HTML/CSS Java JavaScript Node.js PowerShell Python Ruby Rust SQL VBA
## 135         C# Go Java JavaScript Node.js PHP SQL
## 139         C# Python TypeScript
## 144         C# Python SQL
## 150      C HTML/CSS JavaScript Node.js Objective-C PowerShell Python SQL TypeScript
## 152         C# HTML/CSS JavaScript Node.js Python SQL
## 159         HTML/CSS JavaScript Kotlin PHP Python
## 161         C# HTML/CSS Java JavaScript SQL
## 170      C C++ Groovy HTML/CSS Java JavaScript Node.js Perl PHP PowerShell Python
## 173         C# HTML/CSS JavaScript Node.js PowerShell SQL
## 175         C# C++ SQL
## 177      HTML/CSS JavaScript Node.js PHP Python R SQL TypeScript
## 179         C#
## 202         Dart HTML/CSS JavaScript Node.js PHP SQL
## 205      Assembly Bash/Shell C C# C++ Go HTML/CSS Java JavaScript Kotlin Matlab PHP Python SQL
## 206      Bash/Shell Groovy Java JavaScript Kotlin Node.js Python SQL TypeScript
## 211      Assembly Bash/Shell C HTML/CSS JavaScript Julia R SQL VBA
## 212         C# Delphi F# JavaScript TypeScript
## 222      Bash/Shell C# C++ HTML/CSS Java JavaScript PowerShell Python SQL
## 240         HTML/CSS JavaScript Ruby SQL
##      langs_number
## 1          7
## 9          4
## 12         4
## 16         6
## 19         3
## 23         7
## 29        10
## 41         2
## 46         4
## 47         4

```



```
## 56      8
## 62      2
## 65      4
## 67      3
## 74      5
## 75      2
## 83      6
## 86      7
## 87      7
## 89      9
## 90      6
## 94      2
## 103     8
## 105    10
## 108     5
## 113     7
## 117     4
## 119     6
## 123    11
## 135     7
## 139     3
## 144     3
## 150     9
## 152     6
## 159     5
## 161     5
## 170    11
## 173     6
## 175     3
## 177     8
## 179     1
## 202     6
## 205    14
## 206     9
## 211     9
## 212     5
## 222     9
## 240     4
```

```
isTRUE(is.na(pros_inc$YearsCodePro))
```

```
## [1] FALSE
```

```
pros_inc$YearsCodePro[pros_inc$YearsCodePro == "Less than 1 year"] <- 1 ## replace "Less than 1 year" s
head(pros_inc)
```

##	ResponseId	MainBranch	Employment	Country
## 1	51 I am a developer by profession	Employed full-time	Greece	
## 2	180 I am a developer by profession	Employed full-time	Greece	
## 3	209 I am a developer by profession	Employed full-time	Greece	
## 4	367 I am a developer by profession	Employed full-time	Greece	
## 5	415 I am a developer by profession	Employed full-time	Greece	
## 7	595 I am a developer by profession	Employed full-time	Greece	

```

##                                     EdLevel    Age1stCode
## 1          Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 2          Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 3          Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 4          Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 5 Some college/university study without earning a degree 18 - 24 years
## 7 Some college/university study without earning a degree 11 - 17 years
##
## 1
## 2 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 3          Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Ce
## 4          Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 5                                     Other online resources (ex: videos, blogs, etc);O
## 7                                     Other online resources (ex: videos, blogs, etc);School;Other (pleas
##  YearsCode YearsCodePro                               DevType
## 1          12          6                               Developer, full-stack
## 2          24         18 Developer, full-stack;System administrator
## 3           9          4    Developer, mobile;Developer, full-stack
## 4           4          3                               Developer, full-stack
## 5           9          4    Developer, full-stack;Developer, back-end
## 7          13         10 Developer, full-stack;Developer, back-end
##          OrgSize      Currency CompTotal CompFreq
## 1    20 to 99 employees EUR European Euro      2000  Monthly
## 2    20 to 99 employees EUR European Euro      2000  Monthly
## 3     2 to 9 employees EUR European Euro      2200  Monthly
## 4     2 to 9 employees EUR European Euro      2000  Monthly
## 5 100 to 499 employees EUR European Euro      2000  Monthly
## 7    20 to 99 employees EUR European Euro     24000  Yearly
##          LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2          Java;JavaScript;SQL
## 3          Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 4          HTML/CSS;JavaScript;Node.js;PHP;SQL
## 5          C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
## 7          HTML/CSS;JavaScript;PHP;R;SQL
##          LanguageWantToWorkWith
## 1          HTML/CSS;JavaScript;Node.js;TypeScript
## 2          Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 3 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 4          JavaScript;Node.js;PHP;SQL
## 5          C#
## 7          HTML/CSS;JavaScript;Node.js;PHP;R;SQL
##          DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2          IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 3          Couchbase;Elasticsearch;MariaDB
## 4          MySQL;Redis;SQLite
## 5          Firebase;MariaDB;Microsoft SQL Server;MySQL
## 7          MariaDB;MySQL
##          DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite
## 2          MariaDB;Microsoft SQL Server;MySQL;Redis
## 3          Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4          MongoDB;MySQL

```

```

## 5                                     <NA>
## 7           Elasticsearch;MariaDB;MongoDB;MySQL
##           PlatformHaveWorkedWith           PlatformWantToWorkWith
## 1   AWS;DigitalOcean;Microsoft Azure           DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3                                     <NA>                                     <NA>
## 4           AWS;DigitalOcean           AWS;Microsoft Azure
## 5           Microsoft Azure           <NA>
## 7           Heroku           AWS
##           WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2           jQuery;Spring
## 3           Express;React.js
## 4           Laravel;React.js;Symfony;Vue.js
## 5           ASP.NET Core ;jQuery
## 7           jQuery
##           WebframeWantToWorkWith           MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2           jQuery;React.js;Spring           <NA>
## 3           Angular;Express;React.js;Vue.js           React Native
## 4           Laravel;React.js;Vue.js           <NA>
## 5           <NA> .NET Framework;.NET Core / .NET 5
## 7           jQuery;Laravel;React.js           <NA>
##           MiscTechWantToWorkWith   ToolsTechHaveWorkedWith
## 1           Hadoop;React Native           Docker;Kubernetes
## 2           <NA>           Git
## 3           Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4           <NA>           Git
## 5 .NET Framework;.NET Core / .NET 5           Docker;Git;Xamarin
## 7           <NA>           Docker;Git
##           ToolsTechWantToWorkWith           NEWCollabToolsHaveWorkedWith
## 1           Docker;Terraform           Notepad++;Visual Studio;Visual Studio Code
## 2           Docker;Git;Kubernetes           IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn           Visual Studio Code
## 4           Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5           Docker;Git   Android Studio;Visual Studio;Visual Studio Code
## 7           Docker;Git           Visual Studio Code
##           NEWCollabToolsWantToWorkWith           OpSys
## 1 Atom;Sublime Text;Visual Studio Code           Windows
## 2           IntelliJ;Vim;Webstorm Linux-based
## 3           Visual Studio Code Linux-based
## 4           PHPStorm;Visual Studio Code           Windows
## 5           <NA>           Windows
## 7           PHPStorm;Visual Studio Code Linux-based
##
## 1           Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 3           Visit Stack O
## 4           Call a coworker or friend;Visit St
## 5           Call a coworker or friend;Visit Stack Overflow;Google it;Watch
## 7           Call a coworker or friend;Visit Stack Overflow;Google it;
##           NEWSOSites           SOVisitFreq SOAccount
## 1 Stack Overflow;Stack Exchange Multiple times per day           Yes
## 2 Stack Overflow;Stack Exchange   Daily or almost daily           Yes

```

```

## 3 Stack Overflow;Stack Exchange Daily or almost daily Yes
## 4 Stack Overflow Multiple times per day No
## 5 Stack Overflow;Stack Exchange Multiple times per day Yes
## 7 Stack Overflow;Stack Exchange Daily or almost daily Yes
## SOPartFreq SOComm
## 1 A few times per week Yes, definitely
## 2 A few times per week Yes, somewhat
## 3 A few times per month or weekly Yes, somewhat
## 4 <NA> No, not really
## 5 Less than once per month or monthly No, not really
## 7 I have never participated in Q&A on Stack Overflow Yes, somewhat
## NEWOtherComms Age Gender Trans Sexuality
## 1 Yes 25-34 years old Man No Straight / Heterosexual
## 2 No 35-44 years old Man No Straight / Heterosexual
## 3 No 25-34 years old Man No Straight / Heterosexual
## 4 No 25-34 years old Man No Straight / Heterosexual
## 5 No 25-34 years old Man No <NA>
## 7 No 25-34 years old Man No Straight / Heterosexual
## Ethnicity Accessibility
## 1 White or of European descent None of the above
## 2 White or of European descent None of the above
## 3 White or of European descent None of the above
## 4 White or of European descent None of the above
## 5 White or of European descent;Hispanic or Latino/a/x None of the above
## 7 White or of European descent None of the above
## MentalHealth SurveyLength SurveyEase
## 1 None of the above Appropriate in length Easy
## 2 None of the above Appropriate in length Easy
## 3 I have an anxiety disorder Too short Easy
## 4 None of the above Appropriate in length Easy
## 5 None of the above Appropriate in length Easy
## 7 None of the above Appropriate in length Easy
## ConvertedCompYearly lang_work
## 1 25944 C# HTML/CSS JavaScript Node.js PowerShell TypeScript VBA
## 2 25944 Java JavaScript SQL
## 3 28536 Bash/Shell HTML/CSS JavaScript Node.js SQL
## 4 25944 HTML/CSS JavaScript Node.js PHP SQL
## 5 25944 C# HTML/CSS JavaScript Node.js PowerShell SQL
## 7 25944 HTML/CSS JavaScript PHP R SQL
## langs_number
## 1 7
## 2 3
## 3 5
## 4 5
## 5 6
## 7 5

```

```

pros_inc$YearsCodePro<- as.numeric(pros_inc$YearsCodePro)
head(pros_inc)

```

```

## ResponseId MainBranch Employment Country
## 1 51 I am a developer by profession Employed full-time Greece
## 2 180 I am a developer by profession Employed full-time Greece
## 3 209 I am a developer by profession Employed full-time Greece

```

```

## 4      367 I am a developer by profession Employed full-time Greece
## 5      415 I am a developer by profession Employed full-time Greece
## 7      595 I am a developer by profession Employed full-time Greece
##                               EdLevel   Age1stCode
## 1      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 2      Bachelor's degree (B.A., B.S., B.Eng., etc.) 11 - 17 years
## 3      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 4      Bachelor's degree (B.A., B.S., B.Eng., etc.) 18 - 24 years
## 5 Some college/university study without earning a degree 18 - 24 years
## 7 Some college/university study without earning a degree 11 - 17 years
##
## 1
## 2 Other online resources (ex: videos, blogs, etc);School;Online Forum;Online Courses or Certification
## 3      Coding Bootcamp;Other online resources (ex: videos, blogs, etc);School;Online Courses or Certification
## 4      Other online resources (ex: videos, blogs, etc);Online Forum;Online Courses or Certification
## 5                               Other online resources (ex: videos, blogs, etc);Online Courses or Certification
## 7                               Other online resources (ex: videos, blogs, etc);School;Other (please specify)
##  YearsCode  YearsCodePro                               DevType
## 1          12           6      Developer, full-stack
## 2          24          18 Developer, full-stack;System administrator
## 3           9           4      Developer, mobile;Developer, full-stack
## 4           4           3      Developer, full-stack
## 5           9           4      Developer, full-stack;Developer, back-end
## 7          13          10 Developer, full-stack;Developer, back-end
##                               OrgSize      Currency CompTotal CompFreq
## 1  20 to 99 employees EUR European Euro      2000  Monthly
## 2  20 to 99 employees EUR European Euro      2000  Monthly
## 3   2 to 9 employees EUR European Euro      2200  Monthly
## 4   2 to 9 employees EUR European Euro      2000  Monthly
## 5 100 to 499 employees EUR European Euro      2000  Monthly
## 7  20 to 99 employees EUR European Euro     24000  Yearly
##                               LanguageHaveWorkedWith
## 1 C#;HTML/CSS;JavaScript;Node.js;PowerShell;TypeScript;VBA
## 2      Java;JavaScript;SQL
## 3      Bash/Shell;HTML/CSS;JavaScript;Node.js;SQL
## 4      HTML/CSS;JavaScript;Node.js;PHP;SQL
## 5      C#;HTML/CSS;JavaScript;Node.js;PowerShell;SQL
## 7      HTML/CSS;JavaScript;PHP;R;SQL
##                               LanguageWantToWorkWith
## 1      HTML/CSS;JavaScript;Node.js;TypeScript
## 2      Java;JavaScript;Kotlin;Node.js;Python;SQL;TypeScript
## 3 Bash/Shell;Dart;Go;Haskell;HTML/CSS;JavaScript;Node.js;SQL;TypeScript
## 4      JavaScript;Node.js;PHP;SQL
## 5      C#
## 7      HTML/CSS;JavaScript;Node.js;PHP;R;SQL
##                               DatabaseHaveWorkedWith
## 1 Couchbase;MariaDB;Microsoft SQL Server;MongoDB;MySQL;PostgreSQL;Redis;SQLite
## 2      IBM DB2;MariaDB;Microsoft SQL Server;MySQL
## 3      Couchbase;Elasticsearch;MariaDB
## 4      MySQL;Redis;SQLite
## 5      Firebase;MariaDB;Microsoft SQL Server;MySQL
## 7      MariaDB;MySQL
##                               DatabaseWantToWorkWith
## 1 Couchbase;Microsoft SQL Server;MongoDB;Redis;SQLite

```

```

## 2      MariaDB;Microsoft SQL Server;MySQL;Redis
## 3      Elasticsearch;Firebase;MariaDB;PostgreSQL;SQLite
## 4      MongoDB;MySQL
## 5      <NA>
## 7      Elasticsearch;MariaDB;MongoDB;MySQL
##      PlatformHaveWorkedWith      PlatformWantToWorkWith
## 1      AWS;DigitalOcean;Microsoft Azure      DigitalOcean
## 2 IBM Cloud or Watson;Microsoft Azure Google Cloud Platform;Microsoft Azure
## 3      <NA>      <NA>
## 4      AWS;DigitalOcean      AWS;Microsoft Azure
## 5      Microsoft Azure      <NA>
## 7      Heroku      AWS
##      WebframeHaveWorkedWith
## 1 Angular;ASP.NET;ASP.NET Core ;Express;Svelte
## 2      jQuery;Spring
## 3      Express;React.js
## 4      Laravel;React.js;Symfony;Vue.js
## 5      ASP.NET Core ;jQuery
## 7      jQuery
##      WebframeWantToWorkWith      MiscTechHaveWorkedWith
## 1 Angular;Express;Gatsby;React.js;Svelte .NET Framework;.NET Core / .NET 5
## 2      jQuery;React.js;Spring      <NA>
## 3      Angular;Express;React.js;Vue.js      React Native
## 4      Laravel;React.js;Vue.js      <NA>
## 5      <NA> .NET Framework;.NET Core / .NET 5
## 7      jQuery;Laravel;React.js      <NA>
##      MiscTechWantToWorkWith      ToolsTechHaveWorkedWith
## 1      Hadoop;React Native      Docker;Kubernetes
## 2      <NA>      Git
## 3      Flutter;React Native Docker;Git;Kubernetes;Yarn
## 4      <NA>      Git
## 5 .NET Framework;.NET Core / .NET 5      Docker;Git;Xamarin
## 7      <NA>      Docker;Git
##      ToolsTechWantToWorkWith      NEWCollabToolsHaveWorkedWith
## 1      Docker;Terraform      Notepad++;Visual Studio;Visual Studio Code
## 2      Docker;Git;Kubernetes      IntelliJ;Vim;Webstorm
## 3 Docker;Git;Kubernetes;Yarn      Visual Studio Code
## 4      Docker;Git;Kubernetes Notepad++;PHPStorm;Sublime Text;Visual Studio Code
## 5      Docker;Git      Android Studio;Visual Studio;Visual Studio Code
## 7      Docker;Git      Visual Studio Code
##      NEWCollabToolsWantToWorkWith      OpSys
## 1 Atom;Sublime Text;Visual Studio Code      Windows
## 2      IntelliJ;Vim;Webstorm Linux-based
## 3      Visual Studio Code Linux-based
## 4      PHPStorm;Visual Studio Code      Windows
## 5      <NA>      Windows
## 7      PHPStorm;Visual Studio Code Linux-based
##
## 1      Visit Stack Overflow;Go for a walk or other
## 2 Call a coworker or friend;Visit Stack Overflow;Go for a walk or other physical activity;Google it;
## 3      Visit Stack O
## 4      Call a coworker or friend;Visit St
## 5      Call a coworker or friend;Visit Stack Overflow;Google it;Watch l
## 7      Call a coworker or friend;Visit Stack Overflow;Google it;

```

	NEWSOSites	SOVisitFreq	SOAccount		
## 1	Stack Overflow;Stack Exchange	Multiple times per day	Yes		
## 2	Stack Overflow;Stack Exchange	Daily or almost daily	Yes		
## 3	Stack Overflow;Stack Exchange	Daily or almost daily	Yes		
## 4	Stack Overflow	Multiple times per day	No		
## 5	Stack Overflow;Stack Exchange	Multiple times per day	Yes		
## 7	Stack Overflow;Stack Exchange	Daily or almost daily	Yes		
	SOPartFreq	SOComm			
## 1	A few times per week	Yes, definitely			
## 2	A few times per week	Yes, somewhat			
## 3	A few times per month or weekly	Yes, somewhat			
## 4	<NA>	No, not really			
## 5	Less than once per month or monthly	No, not really			
## 7	I have never participated in Q&A on Stack Overflow	Yes, somewhat			
	NEWOtherComms	Age	Gender	Trans	Sexuality
## 1	Yes	25-34 years old	Man	No	Straight / Heterosexual
## 2	No	35-44 years old	Man	No	Straight / Heterosexual
## 3	No	25-34 years old	Man	No	Straight / Heterosexual
## 4	No	25-34 years old	Man	No	Straight / Heterosexual
## 5	No	25-34 years old	Man	No	<NA>
## 7	No	25-34 years old	Man	No	Straight / Heterosexual
	Ethnicity	Accessibility			
## 1	White or of European descent	None of the above			
## 2	White or of European descent	None of the above			
## 3	White or of European descent	None of the above			
## 4	White or of European descent	None of the above			
## 5	White or of European descent;Hispanic or Latino/a/x	None of the above			
## 7	White or of European descent	None of the above			
	MentalHealth	SurveyLength	SurveyEase		
## 1	None of the above	Appropriate in length	Easy		
## 2	None of the above	Appropriate in length	Easy		
## 3	I have an anxiety disorder	Too short	Easy		
## 4	None of the above	Appropriate in length	Easy		
## 5	None of the above	Appropriate in length	Easy		
## 7	None of the above	Appropriate in length	Easy		
	ConvertedCompYearly	lang_work			
## 1	25944	C# HTML/CSS JavaScript Node.js PowerShell TypeScript VBA			
## 2	25944	Java JavaScript SQL			
## 3	28536	Bash/Shell HTML/CSS JavaScript Node.js SQL			
## 4	25944	HTML/CSS JavaScript Node.js PHP SQL			
## 5	25944	C# HTML/CSS JavaScript Node.js PowerShell SQL			
## 7	25944	HTML/CSS JavaScript PHP R SQL			
	langs_number				
## 1	7				
## 2	3				
## 3	5				
## 4	5				
## 5	6				
## 7	5				

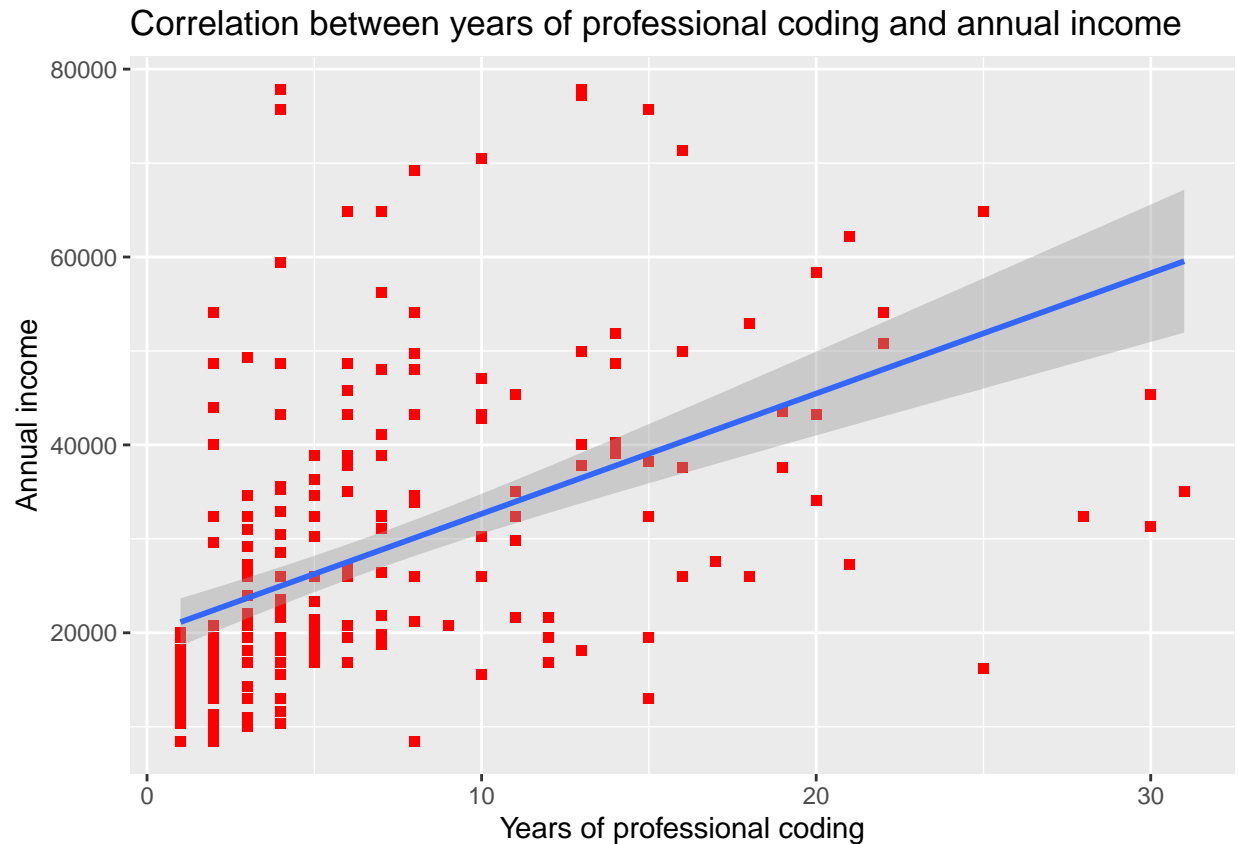
```
ggplot(pros_inc, aes(x = YearsCodePro, y = ConvertedCompYearly))+
  geom_point(col = "red", pch = 15)+
  geom_smooth(method = lm)+
  ggtitle("Correlation between years of professional coding and annual income")+
```

```
labs(x = "Years of professional coding", y = "Annual income")
```

```
## 'geom_smooth()' using formula 'y ~ x'
```

```
## Warning: Removed 1 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 1 rows containing missing values (geom_point).
```



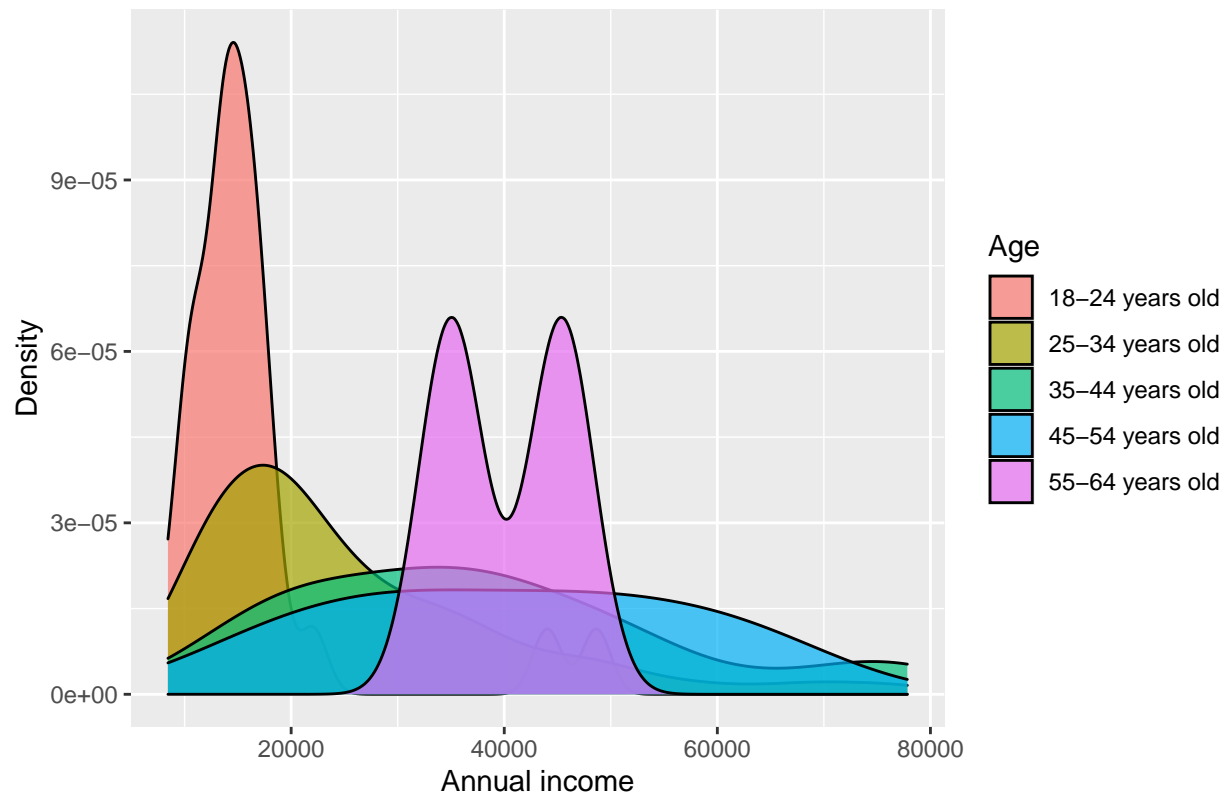
In this particular case, a small trend seems to exist between the two variables, as in some cases, more years of coding experience lead to a better yearly salary. However, this result definitely does not provide a secure answer and more sophisticated methods should be applied, which lie beyond this small case study.

Now, let's create some visualizations in order to explore our data

Density of developer's age groups based on their yearly income:

```
ggplot(pros_inc, aes(x = ConvertedCompYearly, fill = Age))+  
  geom_density(alpha= .7)+  
  ggtitle("Density of programmers age groups based on their income")+  
  labs(x = "Annual income", y = "Density")
```


Density of programmers age groups based on their income



It is obvious that most developers between 18-24 years old earn less than 20k euros per year, with only a small number of them earning more than this amount. The graph gives some excellent result about Greek professional developers which need to be explored in more depth.

In the same way, we can further explore our data and answer some simple (at the beginning) questions regarding the situation with Greek professional developers. For example, we can check with some simple plots the differences between gender, education or other similar issues.