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▼ Data Analysis for Psychology in R1 (2020-2021)[YR]

Dashboard

Announcements

Course information

Weekly materials

Discussion Boards

Virtual Classroom

FAQs

Study Groups

Padlet (anonymous feedback)

Library resources

Assessment

My Grades

Student hub

Have your say

Help and support

Week 11: Sampling

Build Content

Assessments

Tools



In Case You Missed It

Due to the LEARN outage on Sunday 22/11/2020 (see Course Announcements), for the remainder of this semester the weekly q released this week, are postponed by a day (both release-date and due-date).

This week's lab-test will be released on Tuesday 01/12/2020 at 12 noon and is due on Tuesday 08/12/2020 at 12 noon.



Lab-Test 1

Availability: Item is hidden from students. It will be available after 01-Dec-2020 12:00.

Attached Files: dapr1_2021_labtest1.Rmd (4.196 KB)

This is your first graded lab test, which counts for 10% of your course grade.

It is due at 12 noon (Edinburgh Time) on Tuesday 08th December 2020.

1. [Read the instructions](#)

2. Download the .Rmd linked above, open it in RStudio, and read the instructions. Then, complete the questions. *Save your file*

3. Go to the [assessment page](#) to find submission links to submit your completed .Rmd file.

(Please note: **Do NOT submit** .html, .pdf, .jpg, .webarchive, or anything other than your .Rmd file. The instructions linked above explain how to download your .Rmd file to your computer from the rstudio.ppls server in order to upload it to the submission page.)



Week 11: Sampling

Build Content **Assessments** **Tools**

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Lab-Test 1

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Attached Files: [dapr1_2021_labtest1.Rmd](#)

[Open Link in New Tab](#)
[Open Link in New Window](#)
[Open Link in Incognito Window](#)
[Save Link As...](#) [Copy Link Address](#)

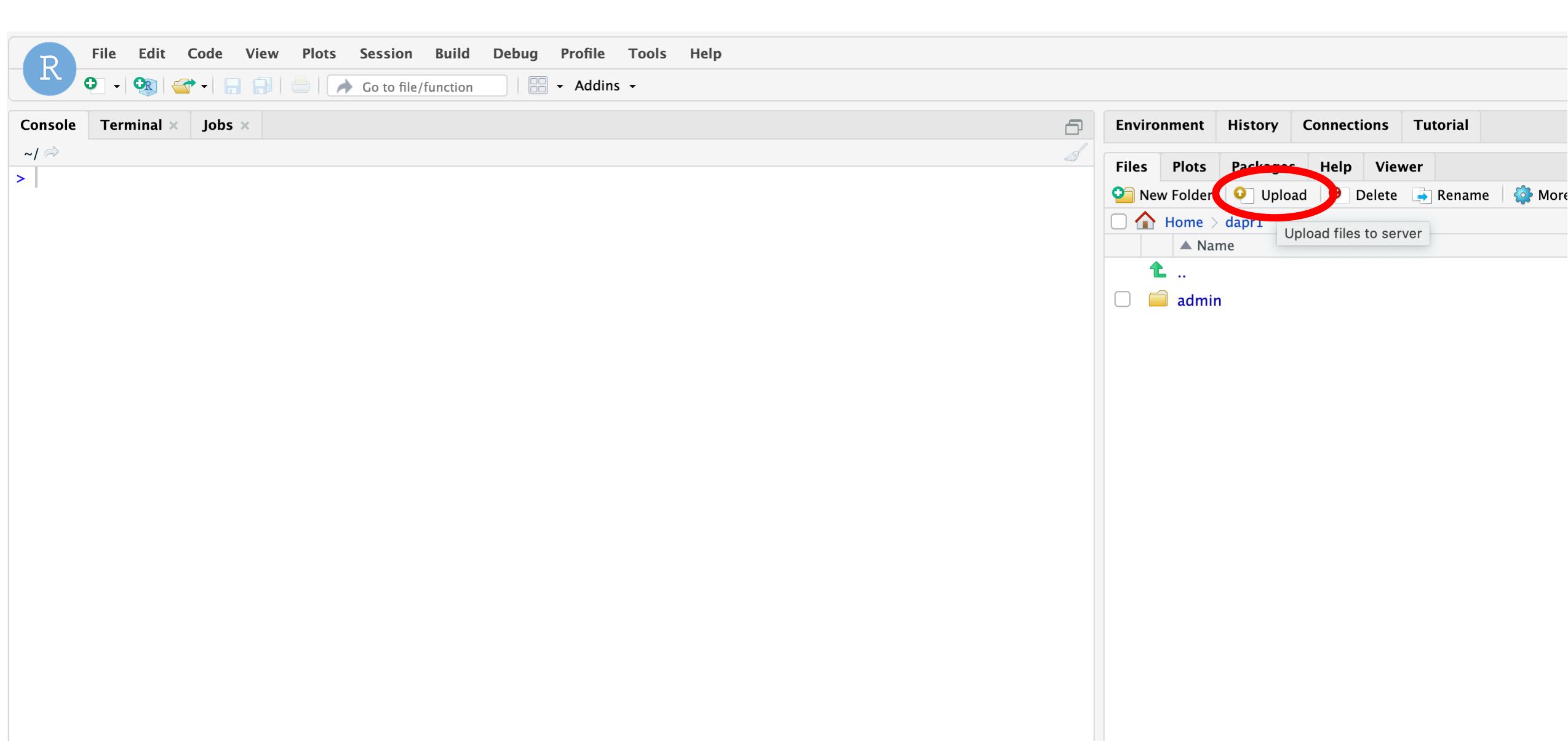
This is your first graded lab test.

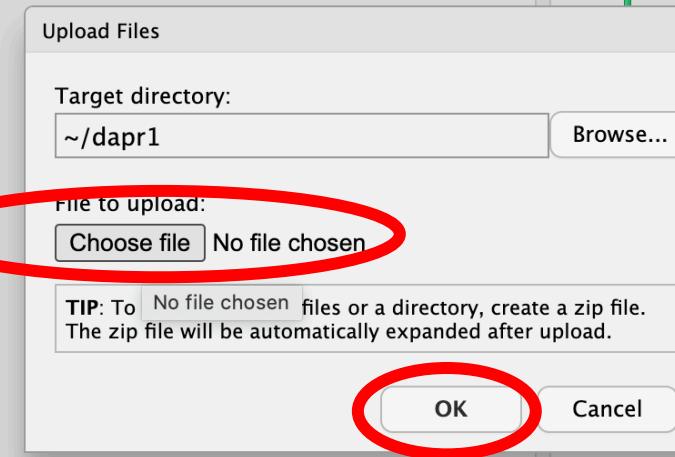
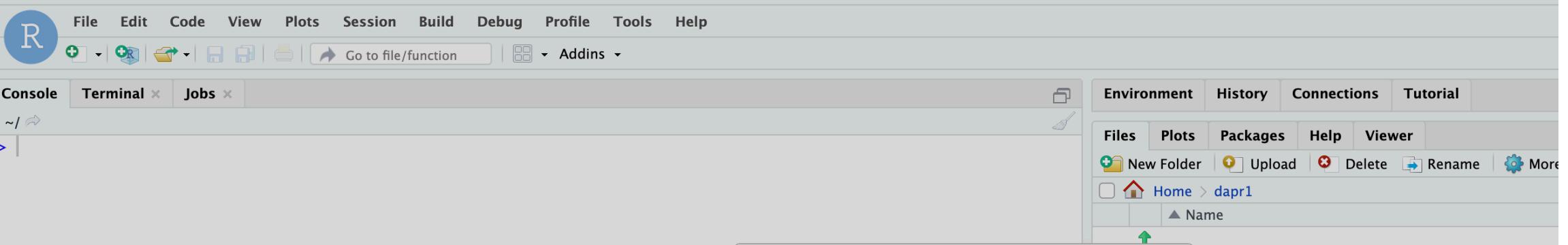
It is due at 12 noon (Edinburgh time).

1. [Read the instructions](#)
2. Download the .Rmd link
3. Go to the [assessment page](#)

(Please note: **Do NOT** submit any files other than your .Rmd file. The instructions linked above tell you how to download your completed .Rmd file.)

Instructions. Then, complete the questions. Save your file and upload it to the submission box.





2



File Edit Code View Plots Session Build Debug Profile Tools Help



Go to file/function

Console Terminal x Jobs x

~/

>

Environment History Connections Tutorial

Files Plots Packages Help Viewer

New Folder Upload Delete Rename More

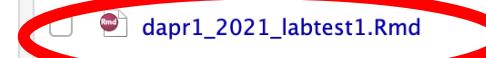
Home > dapr1

Name

..

admin

dapr1_2021_labtest1.Rmd





Go to file/function

Addins

dapr1_2021_labtest1.Rmd x

ABC Knit

```
1 ---  
2 title: 'DAPR1: Lab test 1 (assessed)'  
3 author: 'WRITE_EXAM_NUMBER_HERE_WITHOUT LETTERS'  
4 output: html_document  
5 params:  
6   examnumber: WRITE_EXAM_NUMBER_HERE_WITHOUT LETTERS  
7 ---  
8  
9  
10 # Instructions  
11  
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,  
i.e. next to author and examnumber  
13  
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor can  
be found in your Environment  
15  
16 3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism  
17  
18 4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding a  
certain similarity threshold.  
19  
20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your exam  
number. It will not run if you do not have an exam number inserted where you were asked to insert it.  
21  
22 ````{r echo=FALSE}
```

12:69 # Instructions

R Markdown



Console

Terminal

R Markdown

Jobs

~/

>

Insert Run

Environment History Connections Tutorial

Files Plots Packages Help Viewer

New Folder Upload Delete Rename More

Home > dapr1

Name

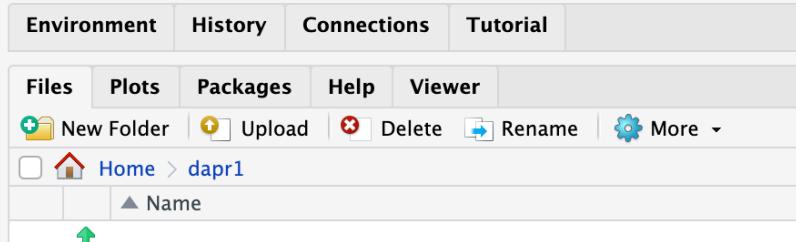
 ..
 admin
 dapr1_2021_labtest1.Rmd

Read the instructions

```
8
9
10 # Instructions
11
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,
i.e. next to author and examnumber
13
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor
can be found in your Environment
15
16 3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism
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18 4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding
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19
20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your
exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.
21
22 ```{r echo=FALSE}
23 if(!is.numeric(params$examnumber)) {
24     stop('You MUST insert your exam number in the two spaces above!')
25 }
26
27 set.seed(params$examnumber)
28
29 v_major <- sample(10^(3:5), 1)
30 v_minor <- sample(2^(5:8), 1)
31 ```
32
33
34 6. Rename the file from dapr1_2021_labtest1.Rmd to YOUR_EXAM_NUMBER.Rmd
35
36   For example: B123456.Rmd
37
38 7. You must only submit this renamed .Rmd file to Turnitin. The file must have extension .Rmd
39
```

11:1 # Instructions ▾ R Markdown ▾

Console Terminal Jobs ~/ ↗



File Edit Code View Plots Session Build Debug Profile Tools Help

dapr1_2021_labtest1.Rmd x Addins

ABC Knit Insert Run

```
1 ---  
2 title: 'DAPR1: Lab test 1 (assessed)'  
3 author: 'WRITE_EXAM_NUMBER_HERE_WITHOUT LETTERS'  
4 output: html_document  
5 params:  
6   examnumber: WRITE_EXAM_NUMBER_HERE_WITHOUT LETTERS  
7 ---  
8  
9  
10 # Instructions  
11  
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,  
i.e. next to author and examnumber  
13  
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor  
can be found in your Environment  
15  
16 3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism  
17  
18 4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding  
a certain similarity threshold.  
19  
20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your  
exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.  
21 # DAPR1: Lab test 1 (assessed) R Markdown
```

Environment History Connections Tutorial

Files Plots Packages Help Viewer

New Folder Upload Delete Rename More

Home > dapr1

Name .. admin dapr1_2021_labtest1.Rmd

Console Terminal Jobs

~/

>

The image shows the RStudio IDE interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The main window displays a code editor for a file named 'dapr1_2021_labtest1.Rmd'. The code contains R Markdown syntax, including code chunks and text instructions. The file browser on the right shows the project structure under 'dapr1' with files like 'admin' and 'dapr1_2021_labtest1.Rmd'. The bottom navigation bar has tabs for Console, Terminal, and Jobs, with the Console tab currently active.

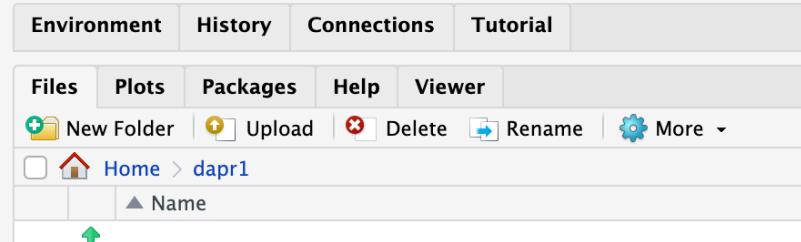
```
1 ---  
2 title: 'DAPR1: Lab test 1 (assessed)'  
3 author: '123456'  
4 output: html_document  
5 params:  
6   examnumber: 123456  
7 ---  
8  
9  
10 # Instructions  
11  
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,  
i.e. next to author and examnumber  
13  
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor  
can be found in your Environment  
15  
16 3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism  
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19  
20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your  
exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.  
21
```

8:1 (Top Level) R Markdown

Console Terminal Jobs

~/

>



The screenshot shows the RStudio interface with several annotations:

- Annotation 1:** A red circle highlights the file name `dapr1_2021_labtest1.Rmd` in the left-hand file browser.
- Annotation 2:** A red circle highlights the **Rename** button in the top right corner of the file browser panel.

Code Editor (Left Panel):

```
1 ---  
2 title: 'DAPR1: Lab test 1 (assessed)'  
3 author: '123456'  
4 output: html_document  
5 params:  
6   examnumber: 123456  
7 ---  
8  
9  
10 # Instructions  
11  
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,  
i.e. next to author and examnumber  
13  
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor  
can be found in your Environment  
15  
16 3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism  
17  
18 4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding  
a certain similarity threshold.  
19  
20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your  
exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.  
21
```

File Browser (Right Panel):

- The current file selected is `dapr1_2021_labtest1.Rmd`.
- The **Rename** button is highlighted with a red circle.

Bottom Navigation:

- Console (selected)
- Terminal
- Jobs

R

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

dapr1_2021_labtest1.Rmd

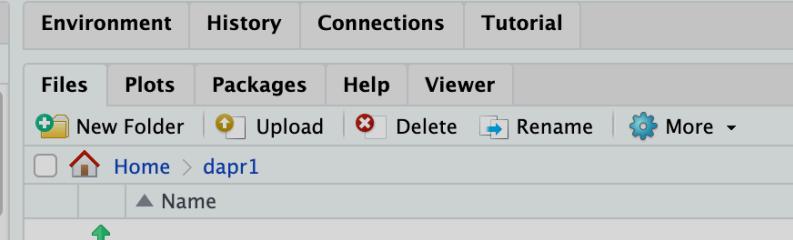
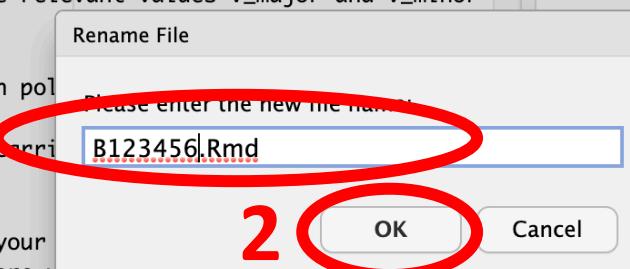
ABC Knit

```
1 ---  
2 title: 'DAPR1: Lab test 1 (assessed)'  
3 author: '123456'  
4 output: html_document  
5 params:  
6   examnumber: 123456  
7 ---  
8  
9  
10 # Instructions  
11  
12 1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above,  
i.e. next to author and examnumber  
13  
14 2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor  
can be found in your Environment  
15  
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17  
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21  
12:69 # Instructions
```

Console Terminal Jobs

~/

>



R File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

B123456.Rmd x ABC Knit Insert Run

16 3. This is an assessed report and is subject to the university of Edinburgh policy on plagiarism

17

18 4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding a certain similarity threshold.

19

20 5. Run the code chunk below without editing it. This will create data for your report that are linked to your exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.

21 22 ````{r echo=FALSE}

23 if(!is.numeric(params\$examnumber)) {

24 stop('You MUST insert your exam number in the two spaces above!')

25 }

26

27 set.seed(params\$examnumber)

28

29 v_major <- sample(10^(3:5), 1)

30 v_minor <- sample(2^(5:8), 1)

31 ````

32

33

34 6. Rename the file from dapr1_2021_labtest1.Rmd to YOUR_EXAM_NUMBER.Rmd

35

36 For example: B123456.Rmd

37

38 7. You must only submit this renamed .Rmd file to Turnitin. The file must have extension .Rmd

39

40

41

42

11:1 # Instructions R Markdown

Console Terminal R Markdown Jobs

~/>

Environment History Connections Tutorial

Files Plots Packages Help Viewer

New Folder Upload Delete Rename More

Home > dapr1

Name .. admin B123456.Rmd

B123456.Rmd x ABC Knit be found in your environment

15
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29 v_major <- sample(10^(3:5), 1)
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31 ````
32
33
34 6. Rename the file from dapr1_2021_labtest1.Rmd to YOUR_EXAM_NUMBER.Rmd
35
36 For example: B123456.Rmd
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39
40

11:1 # Instructions

Console Terminal R Markdown Jobs

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Publish

INSTRUCTIONS

1. BEFORE clicking the Knit button, enter your exam number without any trailing letters in the two slots above, i.e. next to author and examnumber
2. Knit the file to read the text description for part A. Alternatively the relevant values v_major and v_minor can be found in your Environment
3. This is an assessed report and is subject to the University of Edinburgh policy on plagiarism
4. Similarity checks will be performed and further investigations will be carried on the assignments exceeding a certain similarity threshold.
5. Run the code chunk below without editing it. This will create data for your report that are linked to your exam number. It will not run if you do not have an exam number inserted where you were asked to insert it.
6. Rename the file from dapr1_2021_labtest1.Rmd to YOUR_EXAM_NUMBER.Rmd
For example: B123456.Rmd
7. You must only submit this renamed .Rmd file to Turnitin. The file must have extension .Rmd

Part A

Insurance companies pay out money in the event of an adverse event or catastrophe. Clearly, they need to assign price to their policies on the basis of the chance of those adverse events happening. The prices they set will cover for the premiums they pay when a customer claims, and also for the administrative overhead (paying employee salaries and operating costs).

The DAPR home insurance company will pay out £100,000 if a natural disaster causes major structural damage, and £20,000 if a natural disaster causes minor structural damage.

R

File Edit Code View Plots Session Build Debug Profile Tools Help

Go to file/function Addins

B123456.Rmd x

ABC Knit Insert Run

55
56
57 ## Question A.1
58
59 Create a tibble containing two columns: one called damage, with values "None", "Minor", and "Major", and another with the corresponding insurance payouts.
60
61 Answer below:
62
63
64
65 ## Question A.2
66
67 Edit the tibble created in question A.1 to include an additional column reporting the probabilities of each payout.
68
69 Answer below:
70
71
72
73
74 # Part B
75
76 The DAPR2 insurance company offers a wider selection of payouts, and will pay out £500 for accidental damage.
77

Instructions R Markdown

Console Terminal R Markdown Jobs

Environment History Connections
Files Plots Packages Help Vi

Question A.2

Edit the tibble created in question .

Answer below:

Part B

The DAPR2 insurance company of damage.

The DAPR2 board estimate a 1 in ? You can find the DAPR2 board esti following [link](#). Alternatively, you ca <https://uoepsy.github.io/data/dapr>

Let X now denote the random vari customer in the upcoming year.

And so on...

Question B.1

Create a graph displaying the prob

Answer below:

Question B.2



B123456.Rmd x Knit ABC Insert Run Environment History Connections Tutorial

91
92 ## Question B.2 1
93
94 What is the expected payout for a randomly selected customer?
95 What is the standard deviation of X?
96
97 Answer below:
98
99
100
101 ## Question B.3
102 Using inline R code, answer the following questions.
103
104 - Based on the expected payout, how much would you recommend the insurance company charge for their insurance?
105
106 - Insurance companies tend to be risk averse and accordingly will plan for a variety of scenarios. In light of the
107 variability in X, how would you update your recommendation on what the company charges its customers?
108
109 Answer below (replace BLANK and add any text where the three dots are):
110
111 - The expected payout is BLANK, hence ...
112
113 - The standard deviation of X is BLANK, hence ...
114
115
115:1 # Question B.3

Console Terminal x R Markdown x Jobs x

~/> |

Environment History Connections Tutorial
Files Plots Packages Help Viewer

DAPR1: Lab test 1 (ass

123456

Instructions

1. BEFORE clicking the Knit button, enter your exam number in the two slots above, i.e. next to author and examnumber
2. Knit the file to read the text description for part A. Alternatives v_major and v_minor can be found in your Environment
3. This is an assessed report and is subject to the University's anti-plagiarism policies
4. Similarity checks will be performed and further investigation will be carried out for assignments exceeding a certain similarity threshold.
5. Run the code chunk below without editing it. This will create a file with your name and linked to your exam number. It will not run if you do not have the correct file in the current directory where you were asked to insert it.
6. Rename the file from dapr1_2021_labtest1.Rmd to YOURNAME.Rmd
For example: B123456.Rmd
7. You must only submit this renamed .Rmd file to Turnitin. The file must be submitted by the due date.

Part A

Insurance companies pay out money in the event of an adverse event. They need to assign price to their policies on the basis of the characteristics. This is the first step in the process of insurance pricing.

File Edit Code View Plots Session Build Debug Profile Tools Help

unoehomePro

B123456.Rmd x

.Rmd

39
40
41
42
43 # Part A
44
Insurance companies pay out money in the event of an adverse event or catastrophe.
Clearly, they need to assign price to their policies on the basis of the chance of those
adverse events happening.
46 The prices they set will cover for the premiums they pay when a customer claims, and also
for the administrative overhead (paying employee salaries and operating costs).
47
48 The DAPR home insurance company will pay out £100,000 if a natural disaster causes major
structural damage, and £20,000 if a natural disaster causes minor structural damage.
49
50 The DAPR board of administrators has collected historical data and estimated the chance of
those natural disasters occurring.
51 They estimated a 1 in `r sprintf('%d', v_major)` chance that a policy holder experiences a
natural disaster that causes major damage in any given year, and a 1 in `r sprintf('%d',
v_minor)` chance that a policy holder experiences a natural disaster that causes minor
damage in any given year.
52
53
54 Denote by X the random variable representing the insurance payout to a randomly selected
customer in the upcoming year.

70:1 # Question A.2

R Markdown

Console Terminal R Markdown Jobs

~/

Go to file/function Addins

Environment History Connections Tutorial

Files Plots Packages Help Viewer

New Folder Upload Delete Rename

Home > dapr1

Name

..

admin

B123456.Rmd

B123456.html

More

Copy...

Copy To...

Move...

Export...

Set As Working Directory

Go To Working Directory

Open New Terminal Here

Show Hidden Files

Size

4.1 KB

619 KB

D

D

1

2

3