

# 1 Introduction

LAZYTEA is a software that

- randomly choose questions from repositories of multiple choice questions.
- shuffles the order of the questions.
- shuffles the options of a question.
- generates multiple forms of the selected questions in latex format and answer keys to the forms.
- allows users to specify group questions. Group questions will remain together after the shuffling.
- allows users to specify questions that must be included.

## 2 Repository

### 2.1 A simple example

Below is a sample exam repository. Just like html files, the basic structure of a repository file consists of tags. The `<q>` and `</q>` tags define a question. Inside these two tags, the `<b>` and `</b>` tags define the stem of this question. Each option of the question is enclosed by `<c>` and `</c>` tags. The `<b>` and `</b>` tags must always be placed before the `<c>` and `</c>` tags.

```
<q>
<b>This is sample question one.</b>
<c> Choice 1.</c>
<c> Choice 2.</c>
<c> Choice 3.</c>
<c> Choice 4.</c>
<c> Choice 5.</c>
<!-- Comment -->
</q>
```

The above question code will generate LaTeX codes that can be "typeset-ed" into the following. Notice the order of the options is shuffled.

1. \_\_\_\_\_ This is sample question one.  
    **(A)** Choice 1.   **(B)** Choice 3.   **(C)** Choice 2.   **(D)** Choice 5.   **(E)** Choice 4.

### 2.2 Question Properties

**<ANS>** This property tag tells the program which option is the correct one. This is primarily used to generate the answer key files. When a question doesn't have an **<ANS>** tag, a question mark will be placed in the answer key file. Also, in the TA form<sup>1</sup>, the correct answer will be marked with a box. This tag must be placed in between the `<c>` and `</c>` tags.

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<sup>1</sup>Discussed in later section

**<NOA>** This tag creates a option "None of the above.". This option will always be the last option. This tag must be placed in between the **<c>** and **</c>** tags.

**<noshuffle>** This tag disables the shuffling of options of a question. It must be placed between the **<q>** and **</q>** tags and before the **<b>** tag of the question.

**<layout=n>** Force the layout format. n is either 1,2,3, or 4. Without this property tag, the program automatically determinate layout style of a question based on the length of the longest option(# of characters). This option allows users to set the layout of the question. Figure below demonstrates four different layout styles.

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1. \_\_\_\_\_ An example of layout 1.  
    **(A)** Option 2.   **(B)** Option 5.   **(C)** Option 4.   **(D)** Option 1.   **(E)** Option 3.
2. \_\_\_\_\_ An example of layout 2.  
    **(A)** Option 5.   **(B)** Option 3.   **(C)** Option 1.  
    **(D)** Option 2.   **(E)** Option 4.
3. \_\_\_\_\_ An example of layout 3.  
    **(A)** Option 5.   **(B)** Option 4.  
    **(C)** Option 2.   **(D)** Option 1.  
    **(E)** Option 3.
4. \_\_\_\_\_ An example of layout 4.  
    **(A)** Option 2.  
    **(B)** Option 4.  
    **(C)** Option 1.  
    **(D)** Option 3.  
    **(E)** Option 5.
- 

**<keepme>** The question that contains this tag is guaranteed to be selected. It must be placed between the **<q>** and **</q>** tags and before the **<b>** tag of the question.

The following is a more detailed example.

```
<q><keepme><layout=4>
<b>Which state is nicknamed sunshine state?</b>
<c> New York.</c>
<c> Florida.<ANS></c>
<c> <NOA> </c> <!-- None of the above tag -->
<c> Alaska. </c>
<c> Texas.</c>
</q>
```

The latex code generated from the above repository is typesetted into

1. \_\_\_\_\_ Which state is nicknamed the sunshine state?  
    **(A)** Texas.   **(B)** Alaska.   **(C)** Florida.   **(D)** New York.   **(E)** None of the above.

## 2.3 Group

Group tag (<group> and </group>) are used when multiple questions must be placed together. Questions enclosed by <group> and </group> can still be shuffled but only shuffled within the group. Below is an example of using group tags.

```
<group><noshuffle>

<q><keepme><layout=4>
<b>Which state is nicknamed the sunshine state?</b>
<c> New York.</c>
<c> Florida.<ANS></c>
<c> <NOA> </c> <!-- None of the above tag -->
<c> Alaska. </c>
<c> Teax.</c>    </q>

<q> <b>Continue from previous question. What is the best university of the sunshine state?</b>
<c><NOA></c>
<c>University of Florida. <ANS></c>
<c>NYU.</c>
<c>Teax A\&M. </c>
<c>Collage of survial training. </c> </q>

</group>
```

In the above example, it is very obvious that the 2nd question depends on the first one. Therefore it's not appropriate to shuffle the questions within group. The <noshuffle> tag right after the <group> tag tells the program not to shuffle the questions within this group. Note: the options of each question will still be shuffled unless a <noshuffle> tag is inserted inside the question(between <q> and </q> ).

## 2.4 Special tags

**Comments** Just like html, comments must be placed in between '<!--' and '->'. You can find examples of comments in the group questions example above.

**<img> </img>** This allows users to insert images in the exams. You must put the latex code that actually inserts the image. Here is an example:

```
<group>
  <img>\includegraphics[bb=0 0 345 423, width=1.4in]{imgs/exam3_fig1.jpg}</img>
  <q><b>What is the latin name of the animal in the picture above?</b>
    <c>Option1</c><c>Option2</c><c>Option3</c><c>Option4</c><c><NOA></c>
  </q>
  <q><b>How would you eat it if it's actually legal to eat it?</b>
    <c>Option1</c><c>Option2</c><c>Option3</c><c>Option4</c><c><NOA></c>
  </q>
</group>
```

An image can be inserted either in a group or a question. When it's inserted in a group, the `<img>` must be placed right after the `<group>` tag. The image will be inserted before the first question of the group. When it's inserted in a question, the `<img>` tag must be placed right after the `<q>` tag. The image will be inserted right before the question.

### 3 Runnig the program

Run make to compile the program. A binary file named lazyTA will be generated. To see the help of lazyTA, simply type

```
./lazyTA
```

Here are some examples:

1. Read repository file exam1.rep. A non-shuffled form (form 0) and a shuffled form (form A) along with their corresponding TA forms will be generated. Since the output filename is not specified, the output filenames will be EXAM\_Form\_XXX.tex

```
./lazyTA -i exam1.rep
```

2. Read only 40 questions from repository file exam1.rep.

```
./lazyTA -i exam1.rep 40
```

3. Read a total of 50 questions from repository file exam1\_1.rep and exam1\_2.rep.

```
./lazyTA -i exam1_1.rep -i exam1_2.rep -nq 50
```

Numbers of questions selected from each repository will be determined proportionally based on the total number of questions in each repository. For example, there are 100 questions in exam1\_1.rep and 200 questions in exam1\_2.rep.  $\frac{100}{(100+200)} \times 50$  questions will be selected from exam1\_1.rep and  $\frac{200}{(100+200)} \times 50$  questions will be selected from exam1\_2.rep.

4. Read 10 questions from exam1\_1.rep and 25 questions from exam1\_2.rep.

```
./lazyTA -i exam1_1.rep 10 -i exam1_2.rep 25
```

5. Generate 3 different shuffled forms. The filenames will be EXAM\_Form\_A/B/C...tex.

```
./lazyTA -i exam1_1.rep -nf 3
```

6. Read from exam1.rep and the output filename will be midterm.Form.A.tex.

```
./lazyTA -i exam1_1.rep -o midterm
```