Chapter 1

User Manual

This software supports two types of objective question quizzes:

1. **Simple quiz:** In this quiz, the students are supposed to answer all questions.
2. **Jumbled quiz:** In this form of quiz, each student gets a different question paper to answer, which contains questions sampled out of a larger item bank.

1.1 Simple Quiz

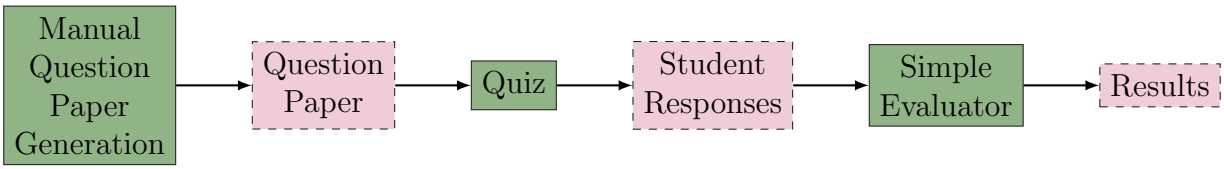

Figure 1.1: Simple Quiz Workflow

The question paper creation for a simple quiz is manual. All students solve an identical question paper. The evaluation step directly runs on the student responses using the `SimpleEvaluator` module.

1.2 Jumbled Quiz

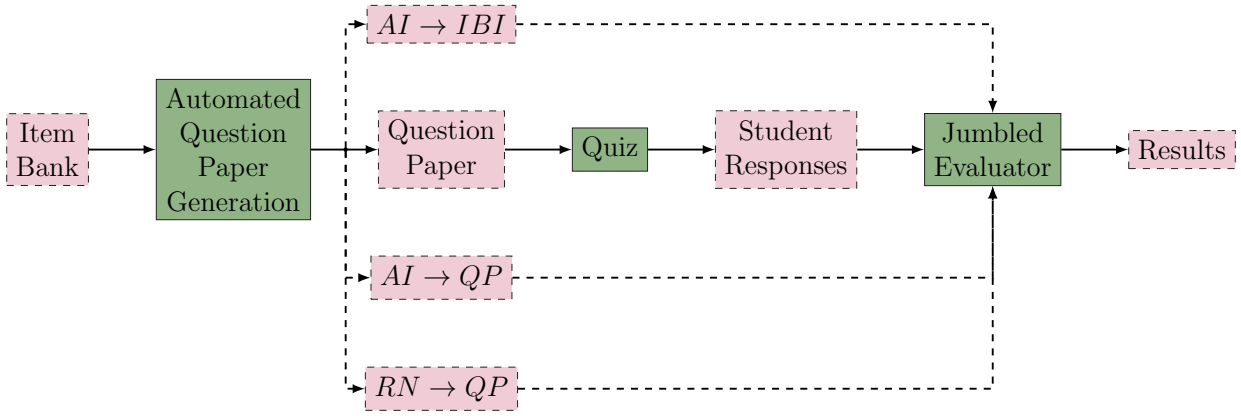

Figure 1.2: Jumbled Quiz Workflow

The question paper creation step uses the `genAIs` (generate assessment items) and genQPs (generate question papers) modules. Once the question papers are generated, quiz is conducted. Finally, the automated evaluation process takes place using the `JumbledEvaluator` module.

Chapter 2

Design

2.1 Question Paper Codes

2.1.1 Question Paper Generation

To discourage cheating in the class, we generate a set of question papers by randomly selecting n questions out of an item-bank of N questions. A set K of distinct *assessment instruments* are generated, numbered 0, 1, ..., $|K-1|$. We call them *assessment instruments*.

The *question paper generator* module G generates a set C of codes each of which can be mapped to any one of the assessment instruments of K. Each of the code c in C is finally mapped to one distinct question paper with c printed on it. This way, the students will not be able to identify which assessment instrument $k \in K$ their copy of the question paper belongs to. Each question paper will have an empty table called the *response table* on page one which will be used by the student to fill in his responses.

G also generates a map from assessment instrument to question order. This tells us the original question number of each item in the give assessment instrument. For example:

Figure 2.1 shows a possible mapping from assessment instruments to item bank items. The table can be interpreted as follows: There are 10 assessment instruments numbered 0 through 9. For each assessment instrument $AI \in K$ (here $|K| = 10$), there is a row in the table. Each cell in that row has the item bank item number for that item. For instance, for $AI = K[0]$, $AI[0] = 3$, $AI[1] = 5$ and so on.

This module will generate a map – called $QP \mapsto AI$ between *question paper code* to *assessment instrument*. For example:

$QP \mapsto AI = [0, 1, 2, ..., 9, 0, 1, 2, ...]$ could be one such mapping. It says that $QP \mapsto AI[0] = 0$ (i.e. the question paper with code 0 maps to assessment instrument number 0). Similarly, $QP \mapsto AI[11] = 1$ (i.e. the question paper with code 11 maps to assessment

0	3	5	1	4	9	12	15	2	10	2
1	4	1	2	11	6	7	5	14	8	12
	...									
9	5	12	2	1	6	7	3	11	8	10

Figure 2.1: Assessment Instrument Item to Item Bank Item map $AII \mapsto IBI$

instrument number 1) and so on.

2.1.2 TA's Job

The TA will note down following:

1. Question paper code for each roll number creating a *roll number* to *question paper code* map $RN \mapsto QP$.

2. transfer the responses into a CSV file corresponding to each student exactly as in the response table.

2.1.3 Automated Evaluation

The *response rearranger* refers to the $RN \mapsto QP$ and $QP \mapsto AI$ map to extract the assessment instrument for each roll number. Using this, the evaluator rearranges the responses in the order as per the item bank to create a rearranged response for the roll number n, $R'(n)$. This is given to the evaluator for final automated evaluation.