Criterion B: Design

Activity A (Teacher's section)

Input data

Data	Example
Line 1 - 8 numbers of numeric sequence with 2 or more undefined members (defends on teacher) Line 2 – all 8 boxes filled with correct answer	Line 1 – 3 6 ? 12 ? 18 21 24 Line 2 – 3 6 9 12 15 18 21 24
Location - Text file (Possible to store maximum 30 record; record=task+answer)	

Output data

1. List of activities is displayed on the screen
2. List of activities is written in ActivityA.txt file (can be printed)

Activity B (Teacher's section)

Input data

Data	Example
Fill 25 squares so some boxes are empty and define sum of every row, column and diagonal; After clicking OK button - fill all undefined boxes with correct answer and click Add button.	Line 1 – 1 7 ? 12 23 Line 2 – ? 2 5 9 ? Line 3 – 7 ? 1 6 22 Line 4 – 6 4 2 ? 12 Line 5 - 14 ? ? 27 ? And 2nd five lines with correct answers
Location - Text file (Possible to store maximum 30 record; record=task+answer)	

Output data

1. List of activities is displayed on the screen
2. List of activities is written in ActivityB.txt file (can be printed)

Activity C (teacher's section)

Input data - ! Everything is made by software– nothing will be saved

Activity A (student's section)

Input data

Data	Comment
Line 1 – label of 8 numbers (with 2 or more undefined) made by teacher Line 2 – 8 empty boxes for student to rewrite and fill in unknown members	If any box is left empty, message will be thrown " fill in all boxes"; After pressing "check" button program checks if answers are correct; If answer is incorrect program will not allowed student to go in next activity.

Activity B (student's section)

Data	Comment
Fill all boxes with undefined members	The same as in **Activity A**

Activity C (student's section)

(convert numbers from decimal to binary)

Data – any decimal number from 0 to 100 Press buttons with numbers (powers of 2) if there is need to write 1 or 0	Comment The same as in **Activity A**

Example

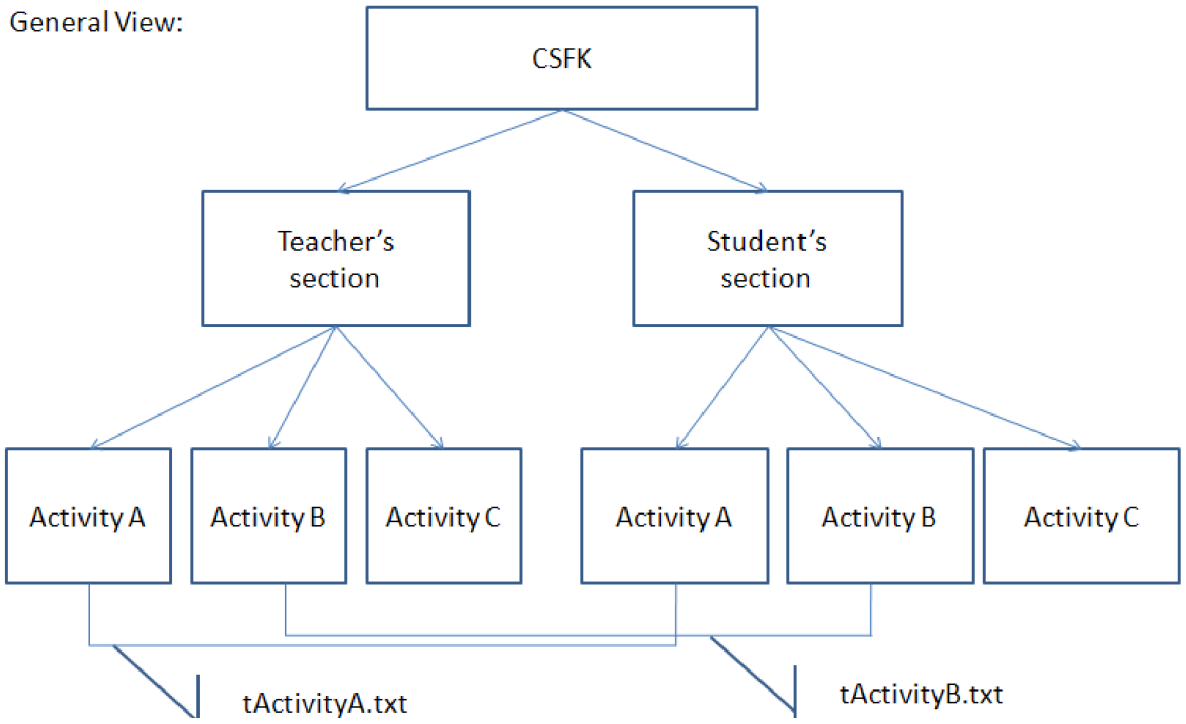
Convert 97 in binary number system:

64	32	16	8	4	2	1
1	1	0	0	0	0	1

1st line/buttons and the number 97 will be displayed on the screen

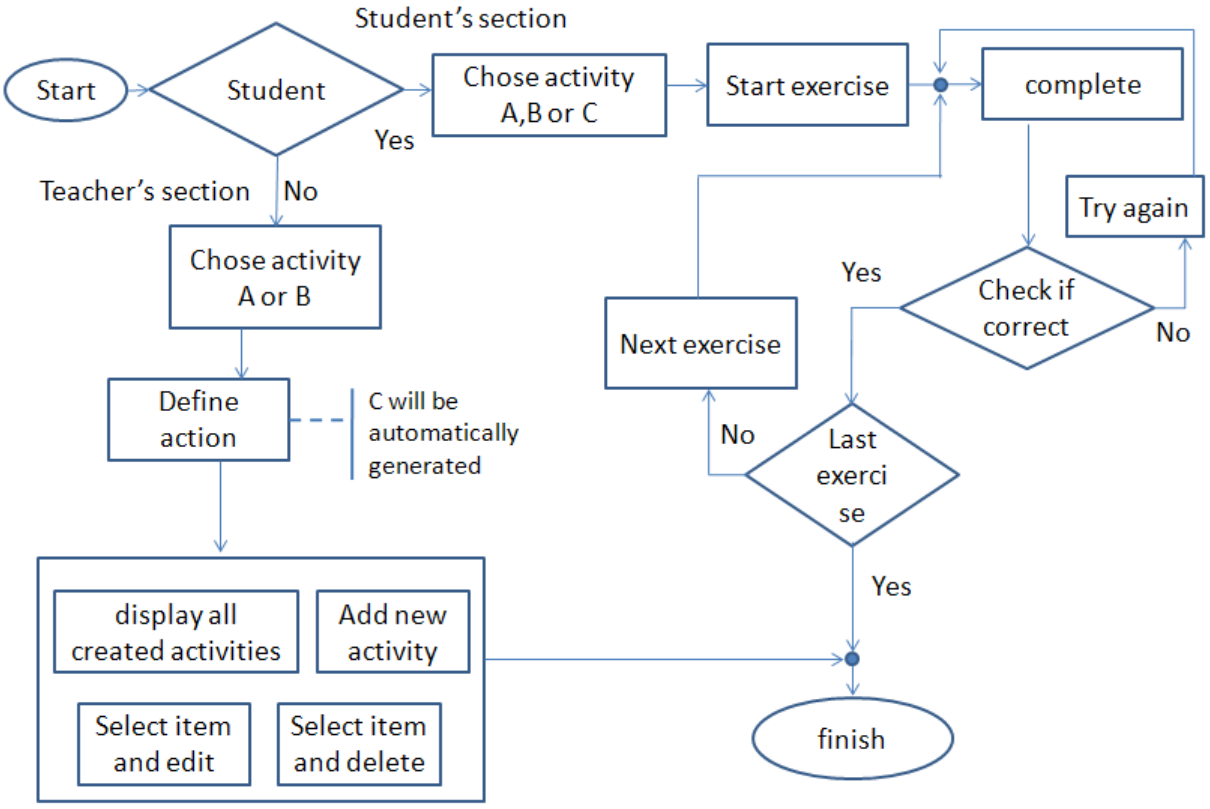
Students should fill in 2nd line with clicking fitted buttons;

General View:



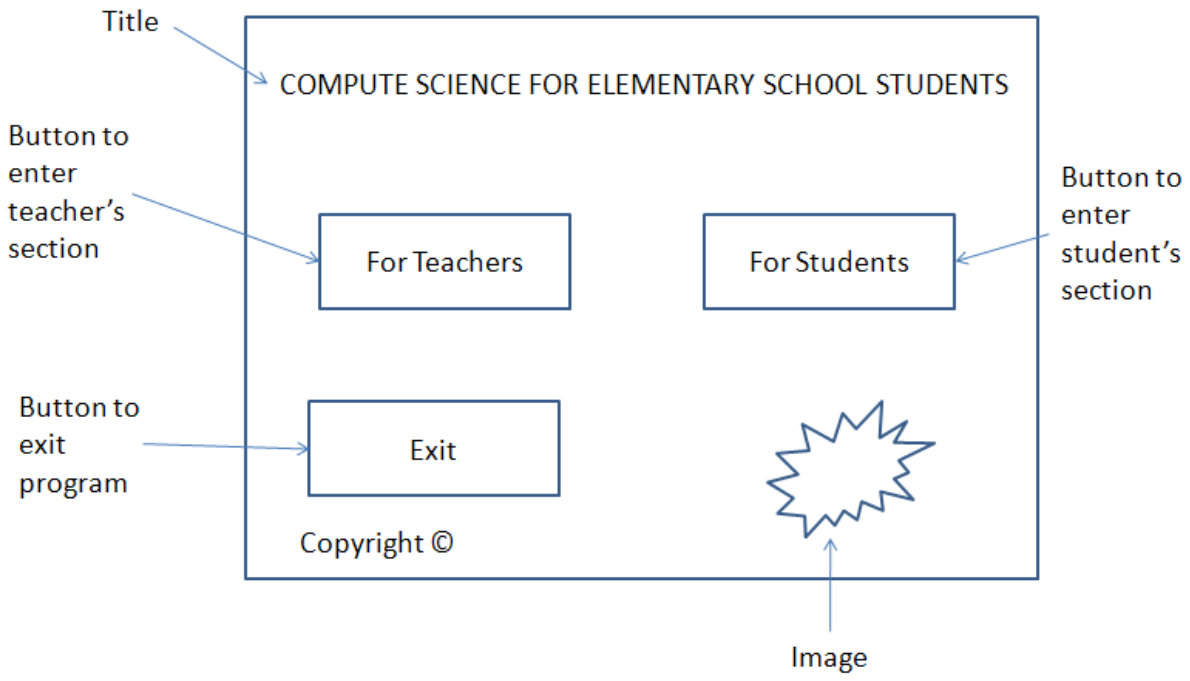
Activity C - the program creates tasks in students section

Process description

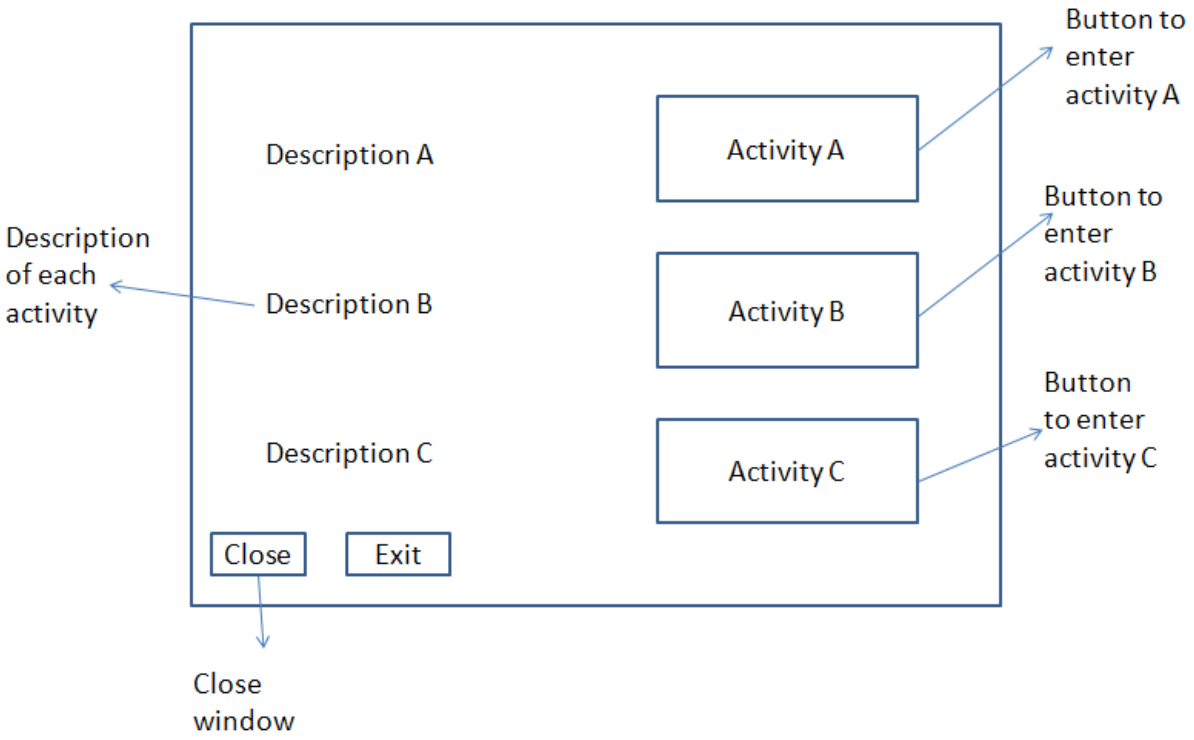


Interface

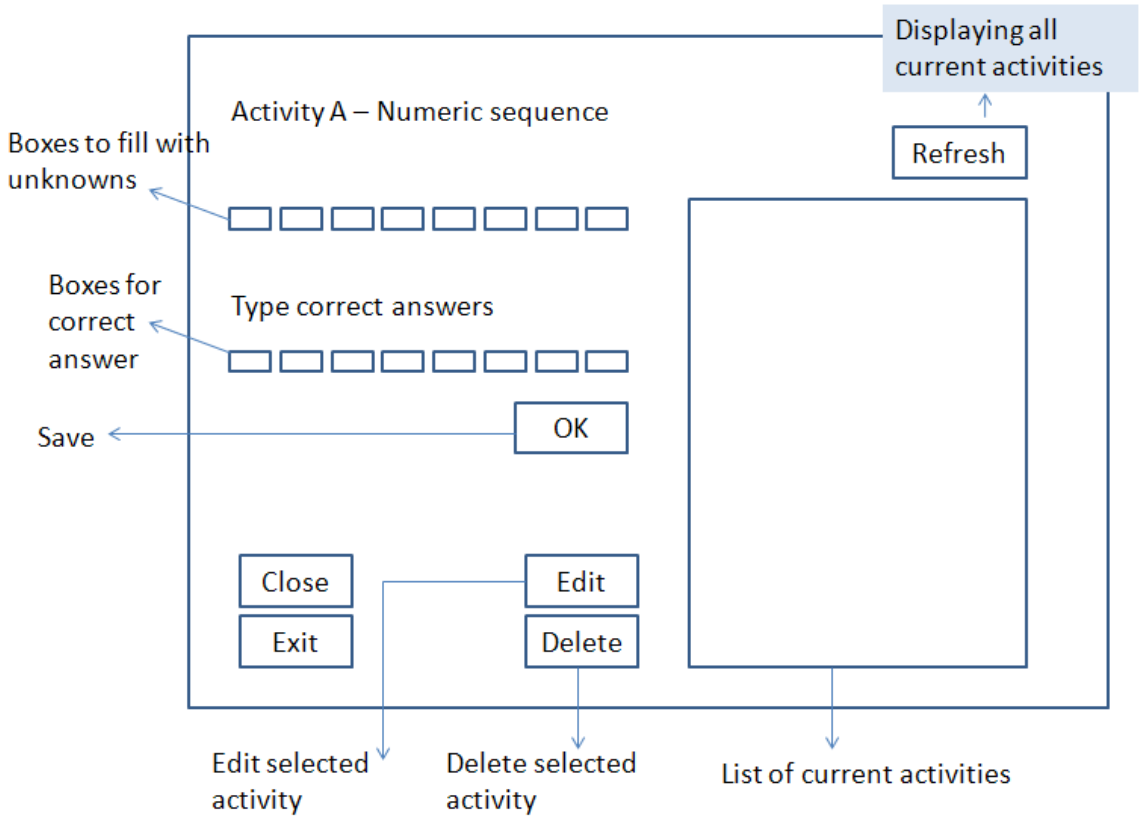
The main window



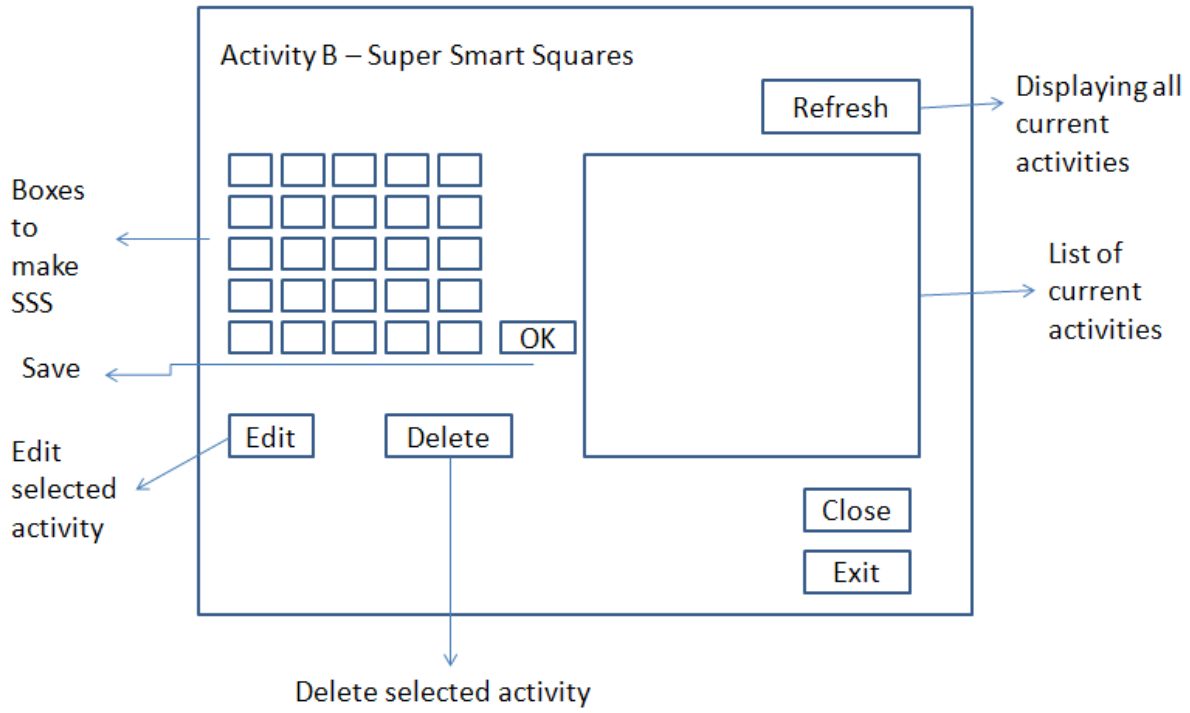
Teacher's section



Activity A



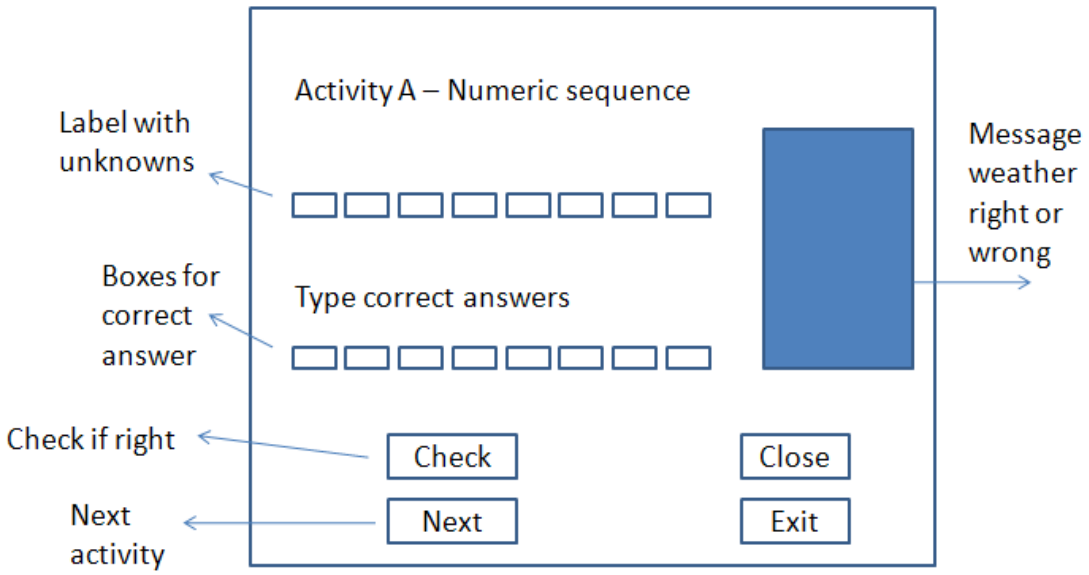
Activity B



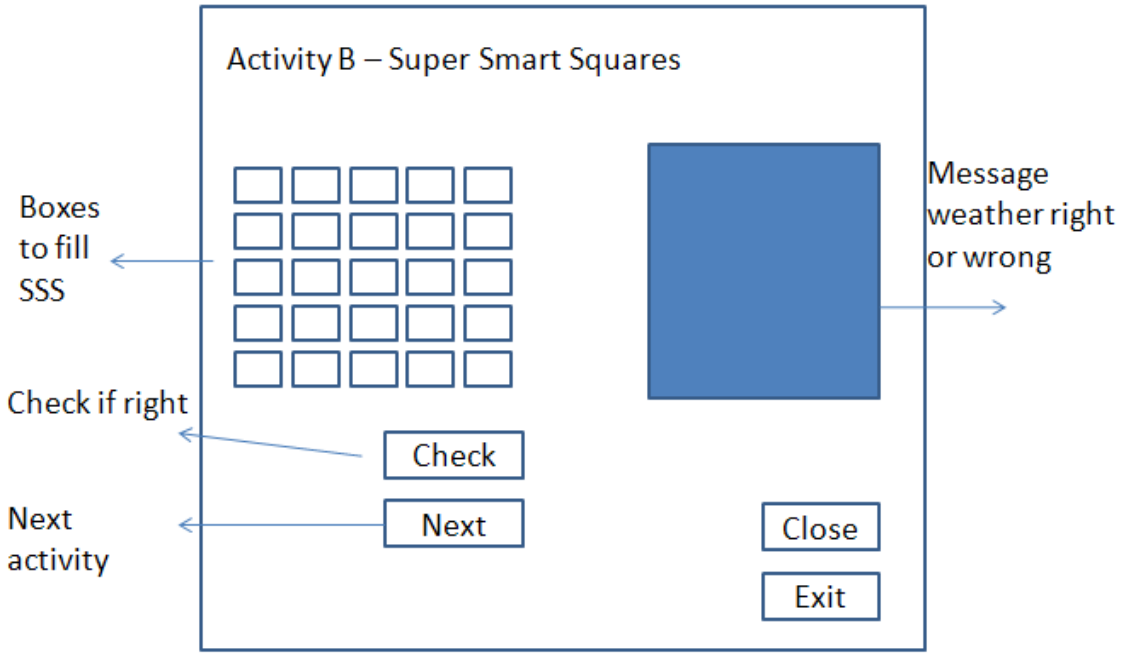
Activity C will be automatically generated

Student's Section

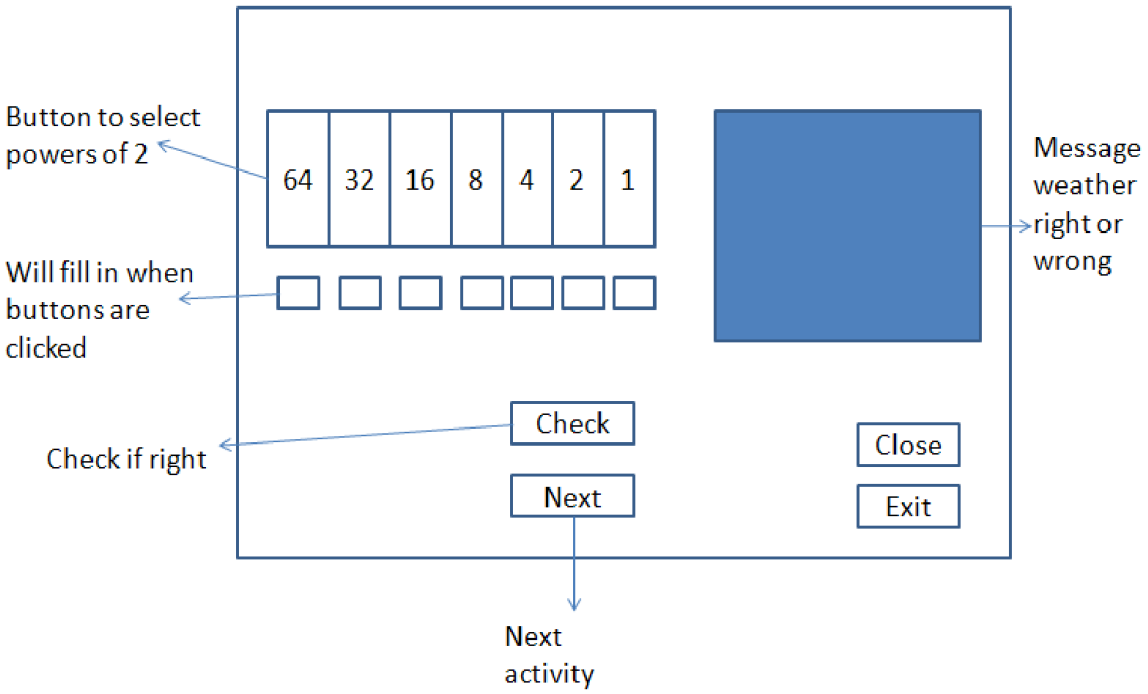
Activity A



Activity B



Activity C



Schedule for developing the product

Program will be divided in three sections because of three different activities my client wants to create; each section contains two parts: "teacher" and "student". I think 2+2+1 weeks will be enough two complete all program; in section C I need to write code only for student's part.

Section 1 - Activity A for teachers (1 week)

- Create interface with buttons, textfields, labels, list objects
- Write code for add activity (data will be located in RandomAccessFile)
- Write code for Listview – teacher needs to see already created activities – data will be taken from file
- Write code for edit / delete item - edit=delete+add

Activity A for students (1 week)

- Create interface
- Write code to display first task
- Write code to check answer – answer will be compared with data written by teacher in txt file (task+answer are saved in txt file as one record)
- Write code to display next task (check if it's not the last one)

Section 2 - Activity B = 2 weeks (approximately the same)

Section 3 - Activity C = 1 week (I need to write code how to convert decimal in binary; check students answer and take next task will be the same as in Activity A and B)

Testing Plan

Examples, for testing the program:

<table>
<tr><td rowspan="2">Activity A</td><td>Teacher's Section – teacher should create tasks and answers
<table><tr><td>2</td><td>4</td><td>6</td><td>8</td><td>?</td><td>12</td><td>?</td><td>16</td></tr></table>
<table><tr><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td></tr></table>
Max 30 exercises</td></tr>
<tr><td>Student's Section
<table><tr><td>2</td><td>4</td><td>6</td><td>8</td><td>?</td><td>12</td><td>?</td><td>16</td><td>condition</td></tr><tr><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td><td>12</td><td>14</td><td>16</td><td>Student's answer</td></tr></table>
After checking each exercise, information massage will be displayed: "Correct! Please continue!" Or "Incorrect! Please try again".</td></tr>
</table>

Activity B

Teacher's section – teacher should create tasks and answers as well

task

1	7	?	12	23
?	2	5	9	?
7	?	1	6	22
6	4	2	?	12
14	?	?	27	?

answer

1	7	3	12	23
0	2	5	9	16
7	8	1	6	22
6	4	2	0	12
14	21	11	27	4

Maximum 30 records

Student's section

1	7	?	12	23
?	2	5	9	?
7	?	1	6	22
6	4	2	?	12
14	?	?	16	?

student should fill all "?" with numbers in the same boxes

1	7	3	12	23
0	2	5	9	16
7	8	1	6	22
6	4	2	0	12
14	21	11	27	4

After checking each exercise, information massage will be displayed: "Correct! Next activity!" Or "Incorrect! Please try again".

Activity C

Teacher's section

In activity C numbers will be chosen randomly and automatically by the software

Student's section

Convert number 97 in binary number system:

64	32	16	8	4	2	1
1	1	0	0	0	0	1

Will be displayed

Student will need to fill in by clicking buttons

Action Test	Method of testing & results
Test if the program runs and main window appears with two sections	Double click on the program icon; main window is displayed: teachers and students buttons works
Check if the teacher/student section works properly	Click on the buttons and appropriate windows appeared with three buttons and descriptions in each appropriately
Activity A and Activity B txt Files with title line should be crated automatically after clicking buttons first time	Files should appear in folder with program file; check if title line is written in it
In activity A (teachers section) check if the add function works properly; task and answer should be saved as one record/one line	Add new sequence with answers and check by refresh List viewer window; (it means ListView window works properly); also, check record in file
Each sequence should be deleted when pressed delete button	Deleted sequence should not appear in list after refresh and in file
Each activity should be edited	In list viewer should have different look after edit, also in file
Teacher should fill all fields	If fields are not field alert message should come and warn teacher to fill in everything
Student should fill all field	If fields are not field alert message should come and warn student to fill in everything
After finishing one exercise student will need to check and information massage should be displayed	Fill (do) one exercise and check on clicking button and appropriate message should be appeared on the screen; I will try both: correct and incorrect answers
Check weather all exercises will be shown on the screen or not when student plays	By clicking on the check button, if the answer is correct, next exercise will be displayed until the last one. If not – student should correct the answer and check it again.
Note: this testing plan will be used in all three section: Activity A, Activity B and Activity C In Activity C student can take as many activities as she/he wants	

Words = 112