The Making of TEBU (Tebak Budaya) Game in Preserving Indonesian Cultural Characteristics

A Sundaru*[1], M B Ismiarti[2]
[1,2] Study Program of Information System, Faculty of Science and Technology, Universitas Katolik Musi Charitas, Palembang, Indonesia

E-mail: anjarsundaru09@gmail.com[1], bella@ukmc.ac.id[2]

Abstrak. Perkembangan teknologi yang begitu cepat, diiringi dengan kebutuhan manusia yang menginginkan kemudahan akan fasilitas-fasilitas yang membantu dalam upaya menyelesaikan pekerjaan. Melihat keadaan tersebut, jika perkembangan teknologi dapat disatukan dengan sejarah dan budaya, maka keuntungan yang didapatkan adalah mempermudah dan mempercepat pencarian informasi. Selain itu dapat menambah wawasan mengenai sejarah dan budaya Indonesia melalui komputer dengan bagan alir *flowchart*. Dalam hal ini penulis mengangkat sebuah judul yaitu permainan tebak budaya dengan menjunjung ciri khas budaya Indonesia yaitu rumah adat, nama tarian, dan judul lagu. Tujuan dari pembuatan *game* ini nantinya agar menjadi sebuah pembelajaran bagi seluruh lapisan masyarat untuk lebih mengenal sejarah dan budaya yang ada di Indonesia.

Kata kunci : permainan; budaya; edukasi

Abstract. Technology has developed very quickly along with human's need to facility that helps them finish their work. Regarding the situation, combining technology advancement with history and culture brings in advantages like easing and accelerating information access and broadening knowledge concerning Indonesian history and culture through computer flowchart. In this study, the authors emphasize Indonesian cultural characteristics in terms of traditional housing, dances, and songs. This study aims to create a learning medium for all people, so they know Indonesian history and culture better.

Keywords : game; culture; education

1. Introduction

The game is part of human behaviour, and part of society as well. Culture is a dynamic whole that involves knowledge, belief, art, morality, law, tradition, as well as all other human ability and habits as members of society [1]. Computer game is a popular entertaining medium played by children, teenagers, and adults. The people play games to build moment to moment encounters. If they resolve a tough game obstacle, seek relief from daily problems, thereby indicating that players often play games to relieve themselves from the stress of the day [2]. Games can promote different forms of learning through various disciplines. It has been shown that even games primarily developed for entertainment have educational value [3].

As the game industry is growing rapidly, the game industry in Indonesia is also going to international industry. Indonesia is now considered to have a rising potential market for video games according to international game developers such as Korea and Japan [4]. The games are varied, and it is classified based on the types of the games. One of the favorite educational games that children, teenagers, and adults like is a guessing quiz game, namely "Tebak Nama Budaya". In this game, the users (as an individual or a team) need to answer what picture is in the game.

Tebak Budaya game can also be used in education to measure the development of knowledge and competence. Due to the reason, the authors initiated to develop a fun game to play and an informative game that increase the players' knowledge about Indonesian culture. The title of the paper is "The Making of TEBU (Tebak Budaya) Game in Preserving Indonesian Culture's Characteristics". Not only is the game entertaining, it also introduces cultures through questions given by the objects in the game.

2. Objectives
With the background, the authors aim to:
1. Introduce cultures through visual objects in the game
2. Inform the users about the culture through fun way with no intention to lecturing
3. Encourage users to get to know Indonesian culture and history better
4. Give information and enrich knowledge about Indonesian cultures
5. Provide an entertaining game for spare time
6. Fulfill the requirement to pass the subject of Artificial Intelligence

3. Literature Review
Soenyoto [5] said that animation is a discipline that combines arts and technology. As a discipline, animation is associated with rules, laws, and proposition that underlies the science, that is animation principles. Moreover, the technology that is used to support science is the tool to record an artwork.

Furthermore, Munir [6] explained that "animation is a combination of text, graphics, and audio in one activity". It can be concluded that animation is a discipline that combines the elements of arts and technology and that can combine media of text, graphics, and audio in one activity.

Arbianingsih et al [7] provides a detailed picture of what users want in computer game to establish such game as a tool in health education. They explained a significant step in gaining the attention of the children so that the educational game can accomplish the learning objectives. The study used descriptive qualitative approach and purposive sampling as a sampling method.

4. Research Methods
The research method that is used in the making of educational game TEBU, which aims to preserve Indonesian culture, is conducted in six stages [5] as follows:
 a. Concept
   This stage is conducted to decide the objectives, types, function, and target users of this game application. In this study, the game is targeted for all ages; children, adults, even old people who want to get away from boredom and exhaustion and relax by playing the game. The type of the game is 2D adventure games without any time limitation. The picture format is *.png and *.jpg.
 b. Design
   In this stage, the author uses Visual Basic to make description of each layout and to make the flowchart to visualize the flow from one layout to the other layout. The layout here functions to a page to save the content of menu that is going to be shown.
 c. Material Collecting
   In this stage, the material collection and preparation needed in the game making process is done including collecting pictures that can be obtained for free. In the collection process, the author downloaded the material from the internet for free with picture format of *.png and *.jpg.
 d. Assembly
   In this stage, the making process is done based on the flowchart that has been prepared previously. Then, the application was made using Visual Basic application.

e. Testing
   The testing process is conducted after making and running the application. In this process, the application is checked, whether errors occurred. The testing process includes testing some functions that are missing or corrupted, checking the design interface or other performances.

f. Distributing
   In this stage the game application that has been finished is compiled in the format of .exe, then installed to the computer. It cannot be the last stage if there is still some improvement to the game application. This stage is also used to evaluate the development of the game application in the future.

5. Discussion

5.1 System Need Analysis
System need analysis is used to help the system analyst in deciding everything needed in the system making. The system need is divided into functional need and non-functional needs.

5.1.1 Functional Needs
Functional needs include the processes done by the system. Functional needs also involve informations needed and resulted by the system. The following are the functional needs of the game:
   1. The system needs to display the main menu
   2. Function button in the main menu *(Rumah adat, nama tarian, judul lagu, cara bermain, tentang, keluar, ok,* and *kembali)*
      a. *Rumah Adat* functions to start the game about traditional housing
      b. *Nama Tarian* functions to start the game about traditional dances
      c. *Judul Lagu* functions to start the game bout traditional songs
      d. *Cara bermain* functions to show the procedure of using the application
      e. *Tentang* functions to show the identity of the application maker
      f. *Keluar* functions to close the application
      g. *OK* functions to process and execute the script
      h. *Kembali* functions to close the active page
   3. The system needs to be able to identify correct and incorrect answer
   4. The system needs to be able to show points
   5. The system needs to be able to close the page if the answer is incorrect.
   6. The system needs to be able to open the page ordered.

5.1.2 Non-Functional Needs
Non-functional need analysis included the properties needed to support the making of the game. This game needs a series of tools to support the making and the testing of the game such as:
   1. Software
      The software needed for making educational game *"TEBU (TEBAK BUDAYA) DALAM MELESTARIKAN KEKHASAN BUDAYA INDONESIA"* is as follows:
      a. Microsoft Windows 10 (64 bit)
      b. Microsoft Office Professional Plus 2016
      c. Visual Studio Community 2017
      d. Google Chrome Version 74.0.3729.169 (official) (64 bit)
      e. Snipping Tool version 1703
      f. And other supporting softwares
   2. Hardware
      The hardware needed for making educational game *"TEBU (TEBAK BUDAYA) DALAM MELESTARIKAN KEKHASAN BUDAYA INDONESIA"* is as follows:
      a. Processor: Intel Core i5-6200U, 2.8 Ghz
      b. Nvidia Geforce 930mx

c. Memory RAM: 4 GB
d. HDD: 1000 TB

5.2 Flowchart
Flowchart is a chart showing the flow of programming or other systemic procedure based on the logics. This chart explains the procedures in the system. The system flowchart shows what is processed by the system [5].

5.2.1 Flowchart of Traditional Housing Quiz
It starts with the user that clicks the button of *Rumah Adat*, then a dialogue pane showing that the the quiz is going to start pops up. Buttons *OK* and cancel also shows in the pane. When the user clicks *OK*, *Rumah Adat* Level 1 shows up and when the user clicks *Cancel*, the system cancels the operation and stays in Main Menu. The quiz flowchart is shown in Figure 1.
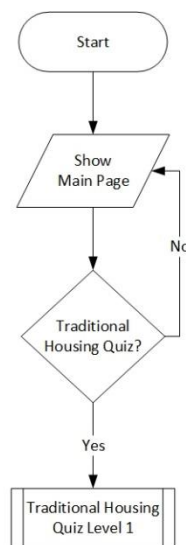
Figure 1. Flowchart of Traditional Housing Quiz

5.2.2 Flowchart of Traditional Housing, Dances, and Songs Quiz Level 1
The user enters the main menu of *Rumah Adat* Level 1. The user chooses the best answer out of three pictures in the page. The system will then check whether the answer is correct or not. If all answer is correct, a dialogue window will show up and the user will go to *Rumah Adat* Level 2. If one (or more) of the answers is incorrect or the user does not answer the questions, the dialogue pane will show the points and the answers of the user. The flowchart of *Rumah Adat* page can be seen in Figure 2.
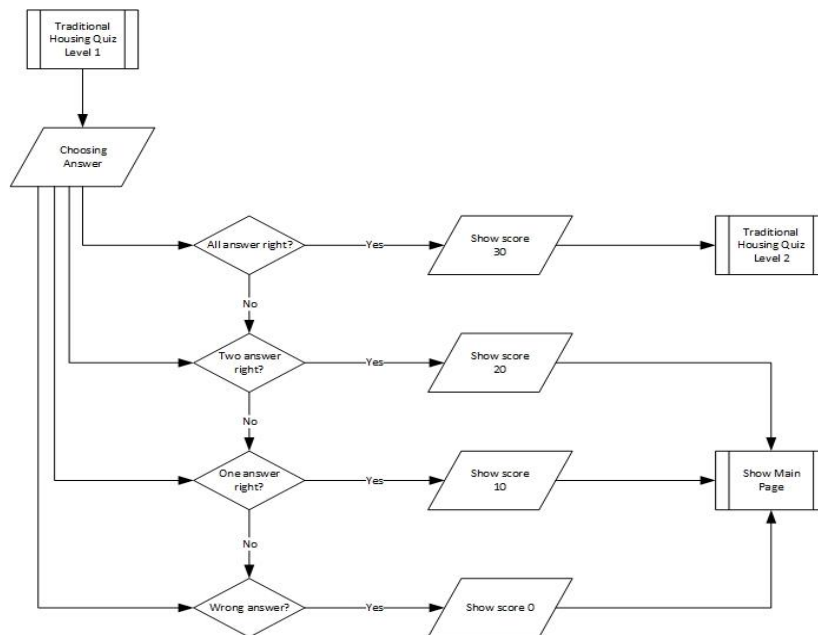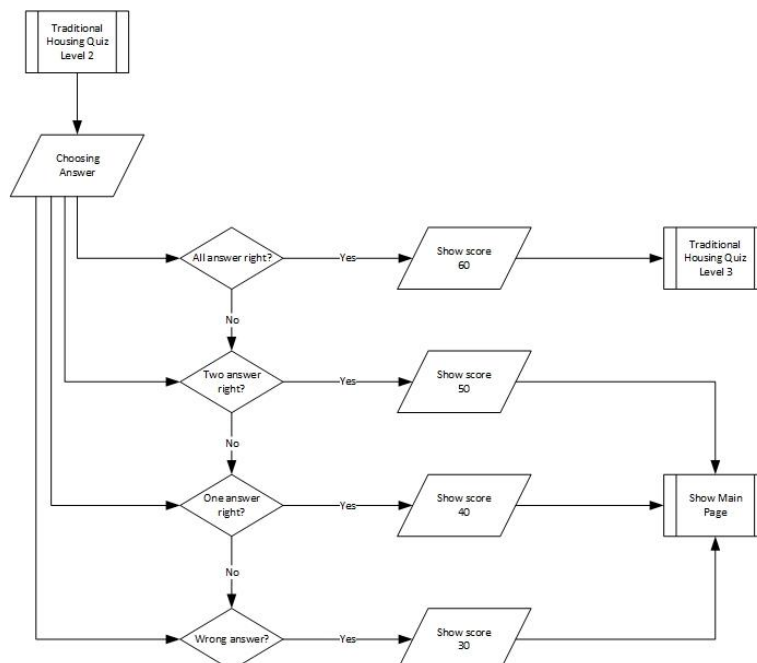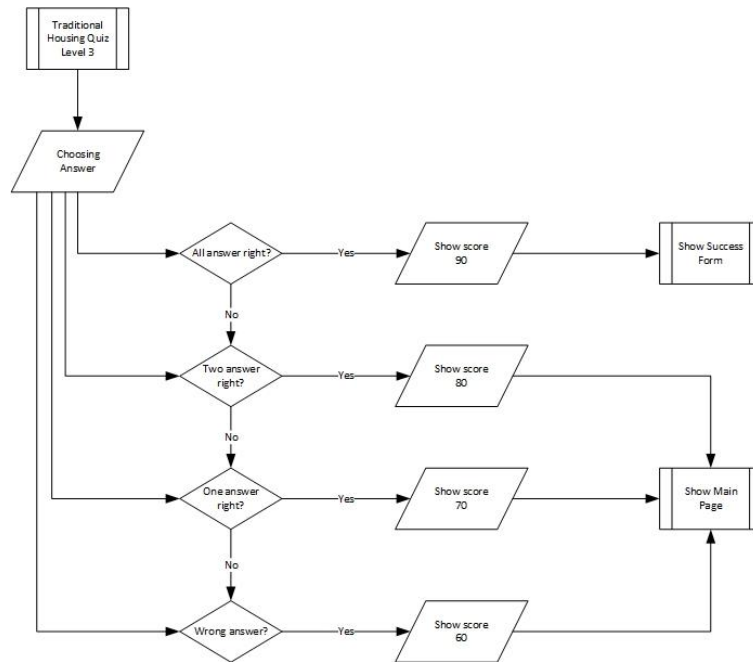
Figure 2. Flowchart of *Rumah Adat*, *Nama Tarian* and *Judul Lagu* Level 1

5.2.3 Flowchart of Rumah Adat, Nama Tarian, and Judul Lagu Quiz Level 2
The user enters the main menu of *Rumah Adat* Level 2. The user chooses the best answer out of three pictures in shown the page. The system will then check whether the answer is correct or not. If all answer is correct, a dialogue window will show up and the user will go to *Rumah Adat* Level 3. If one (or more) of the answers is incorrect or the user does not answer the questions, the dialogue pane will show the points and the answers of the user. The flowchart of *Rumah Adat* page can be seen in Figure 3.

Figure 3. Flowchart of *Rumah Adat, Nama Tarian* and *Judul Lagu* Level 2

5.2.4 Flowchart of Rumah Adat, Nama Tarian, and Judul Lagu Level

The user enters the main menu of *Rumah Adat* Level 3. The user chooses the best answer out of three pictures in shown the page. The system will then check whether the answer is correct or not. If all answer is correct, a dialogue window will show up and the user will go to success page. If one (or more) of the answers is incorrect or the user does not answer the questions, the dialogue pane will show the points and the answers of the user. The flowchart of *Rumah Adat* page can be seen in Figure 4.

Figure 4. Flowchart of *Rumah Adat*, *Nama Tarian,* and *Judul Lagu* Level 3

5.3 Implementation
5.3.1 Home Display

When the game is played, the system will show the main page with some buttons, which are *Rumah Adat*, *Nama Tarian*, *Judul Lagu*, *Cara Bermain*, *Tentang*, dan *Keluar*. The pictures reflect the content of the game. The main home appearance can be seen in Figure 5.

Figure 5. Main Home Display

5.3.2 Display of Rumah Adat, Nama Tarian and Judul Lagu

The user is asked to choose the action, either to continue the game by clicking *OK* or to cancel the game by clicking *Cancel*. The dialogue display of *Rumah Adat* can be seen in Figure 6.
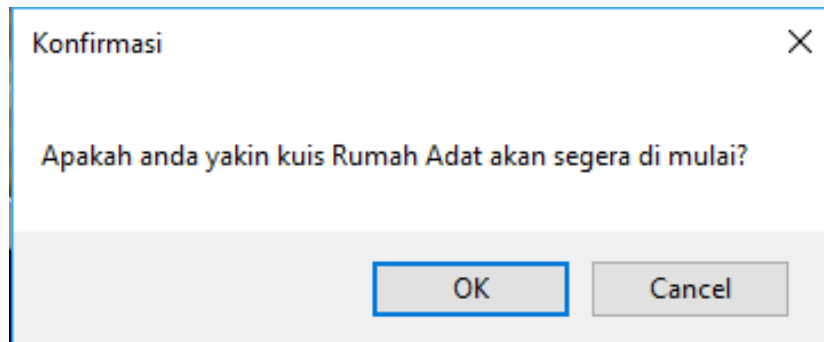

Figure 6. Dialogue Display *of Rumah Adat, Nama Tarian,* and *Judul Lagu*

5.3.3 Display of Rumah Adat, Nama Tarian, and Judul Lagu Level 1

The user chooses three correct answers in the provided checkbox, then clik OK to run the game. There are also *Cara Bermain* button to show the procedure of the game, and *Kembali* to return to the main menu dan cancel the process. The display of *Rumah Adat*, *Nama Tarian*, and *Judul Lagu* Level 1 can be seen in Figure 7.
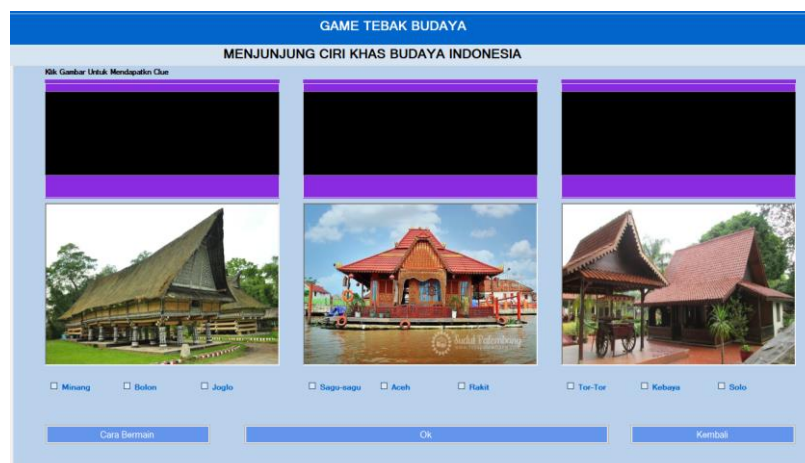
Figure 7. Page Display of *Rumah Adat, Nama Tarian,* and *Judul Lagu* Level 1

5.3.4 Dialogue Display of Point 0

When the user chooses the wrong answer, the dialogue box will pop up to show the points. The dialogue display of the points can be seen in Figure 8.
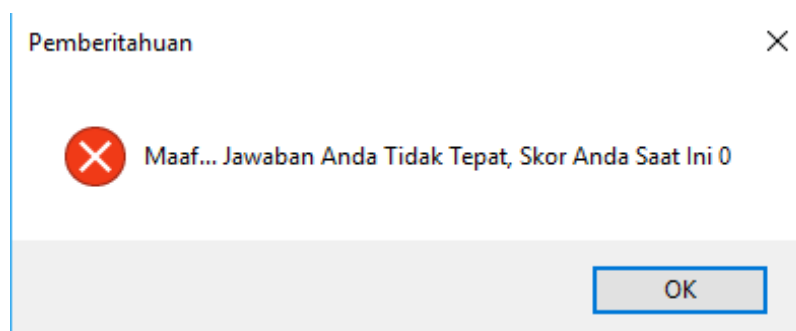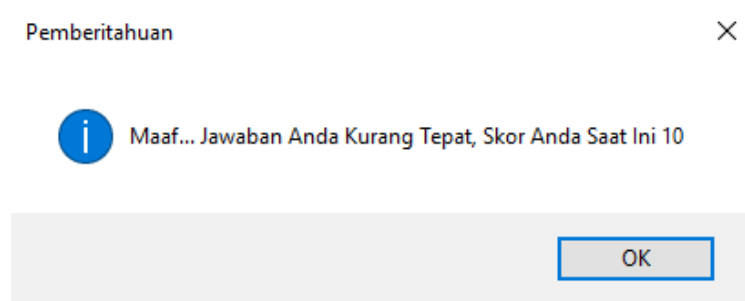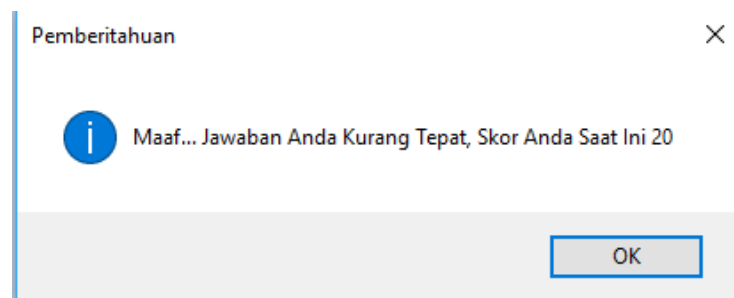

Figure 8. Dialogue Display of Point 0

5.3.5 Dialogue Display of Points 10
When the user chooses the wrong answer, the dialogue box will pop up to show the points. The dialogue display of the points 10 can be seen in Figure 9.

Figure 9. Dialogue Display of Point 10

5.3.6 Dialogue Display of Points 20
When the user chooses the wrong answer, the dialogue box will pop up to show the points. The dialogue display of the points 20 can be seen in Figure 10.

Figure 10. Dialogue Display of Point 20

5.3.7 Dialogue Display of Points 30
When the user chooses the right answer, the dialogue box will show the points. The dialogue display of the points 30 can be seen in Figure 11.
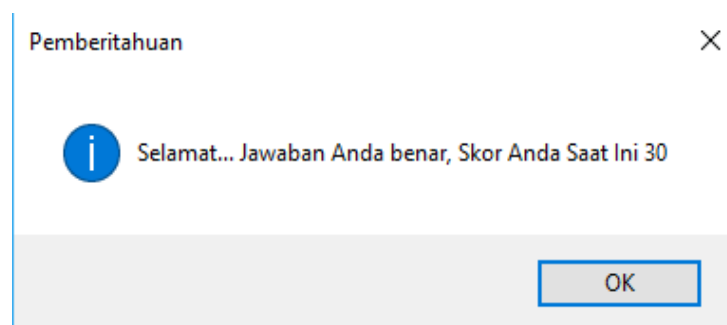

Figure 11. Dialogue Display of Point 30

5.3.8 Display of Rumah Adat, Nama Tarian, and Judul Lagu Level 2
The user chooses three correct answers in the provided checkbox, then clik *OK* to run the game. There are also *Cara Bermain* button to show the procedure of the game, and *Kembali* to return to the main menu dan cancel the process. The display of *Rumah Adat*, *Nama Tarian*, and *Judul Lagu* Level 2 can be seen in Figure 12.
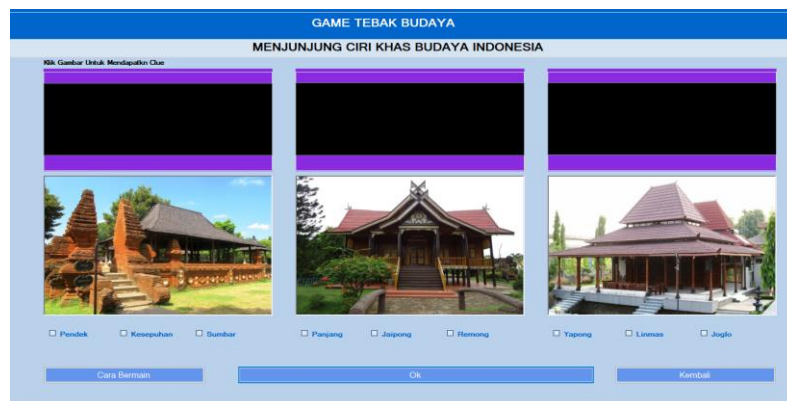
Figure 12. Display of *Rumah Adat, Nama Tarian,* and *Judul Lagu* Level 2

5.3.9 Dialogue Display of Points 30

When the user chooses the right answer, the dialogue box will show the points. The dialogue display of the points 30 can be seen in Figure 13.
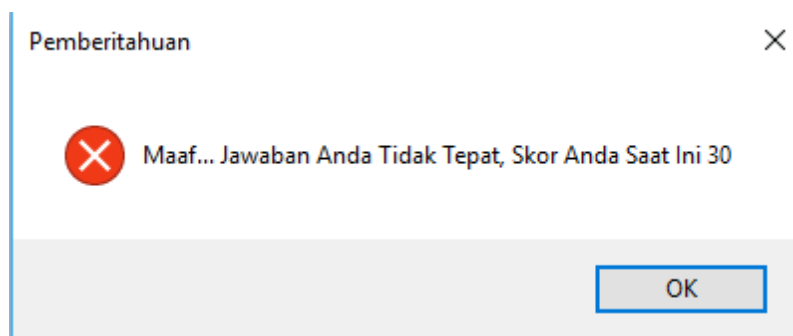

Figure 13. Dialogue Display of Points 30

5.3.10 Dialogue Display of Points 40

When the user chooses the wrong answer, the dialogue box will show the points. The dialogue display of the points 40 can be seen in Figure 14.
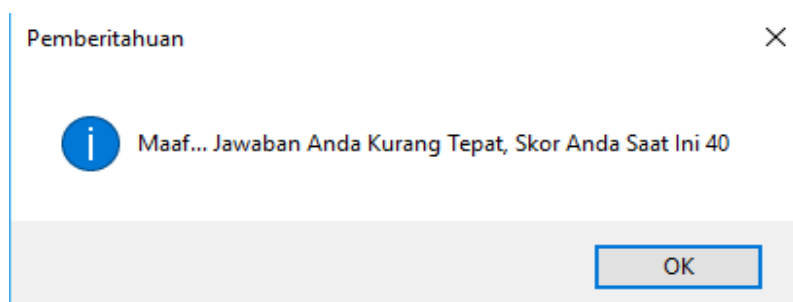

Figure 14. Dialogue Display of Points 40

5.3.11 Dialogue Display of Points 50
When the user chooses the wrong answer, the dialogue box will show the points. The dialogue display of the points 50 can be seen in Figure 15.
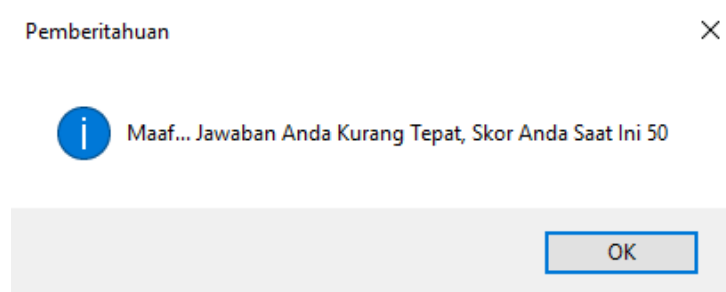

Figure 15. Dialogue Display of Points 50

5.3.12 Dialogue Display of Points 60
When the user chooses the right answers, the dialogue box will show the points. The dialogue display of the points 60 can be seen in Figure 16.
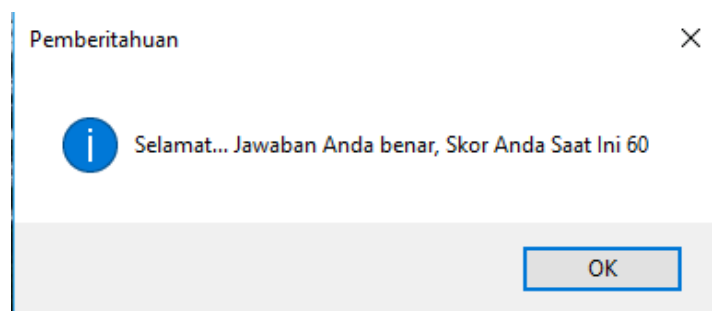

Figure 16. Dialogue Display of Points 60

5.3.13 Display of Rumah Adat, Nama Tarian, and Judul Lagu Level 3
The user chooses three correct answers in the provided checkbox, then clik OK to run the game. There are also *Cara Bermain* button to show the procedure of the game, and *Kembali* to return to the main menu dan cancel the process. The display of *Rumah Adat*, *Nama Tarian*, and *Judul Lagu* Level 3 can be seen in Figure 17.
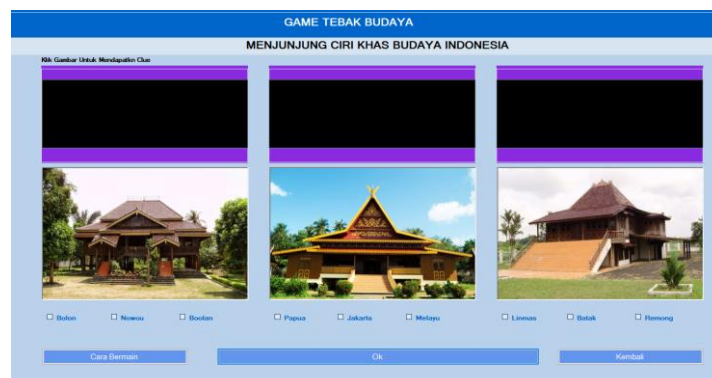

Figure 17. Display of *Rumah Adat, Nama Tarian,* and *Judul Lagu* Level 3

5.3.14 Dialogue Display of Points 60
When the user chooses the wrong answers, the dialogue box will show the points. The dialogue display of the points 60 can be seen in Figure 18.

Figure 18. Dialogue Display of Points 60

5.3.15 Dialogue Display of Points 70
When the user chooses the wrong answers, the dialogue box will show the points. The dialogue display of the points 70 can be seen in Figure 19.

Figure 19. Dialogue Display of Points 70

5.3.16 Dialogue Display of Points 80
When the user chooses the wrong answers, the dialogue box will show the points. The dialogue display of the points 80 can be seen in Figure 20.
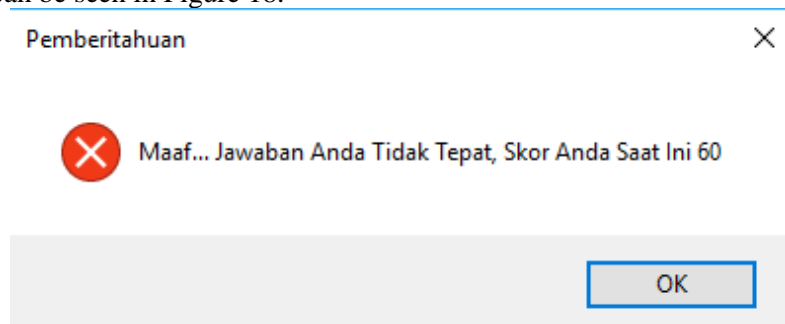

Figure 20. Dialogue Display of Points 80

5.3.17 Dialogue Display of Points 90
When the user chooses the wrong answers, the dialogue box will show the points. The dialogue display of the points 90 can be seen in Figure 21.
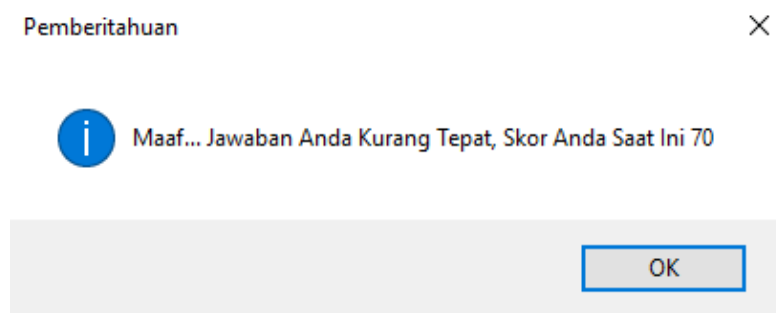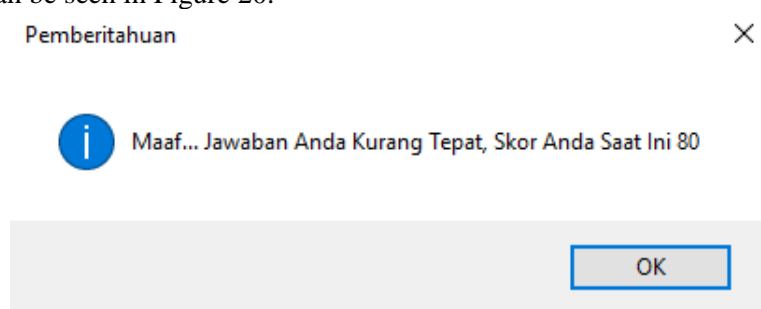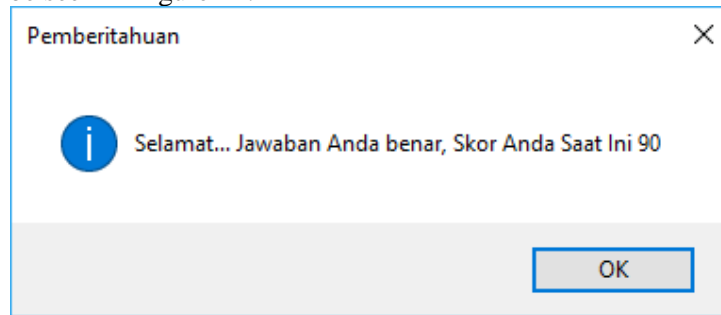

Figure 21. Dialogue Display of Points 90

5.4 Algorithm and Programming
Algorithm is a computational procedure that takes some values or a set of values as input, then processed as output. In other words, the order of computational steps that change input to be output [5]. Moreover, Munir [6] defines that algorithm is the order of logical steps to solve problems that are arranged systematically.

```
1.    If c2.Checked = True And c4.Checked = True And c8.Checked = True Then
2.          MsgBox("Selamat... Jawaban Anda benar, Poin Anda Saat Ini 30",
                MsgBoxStyle.Information, "Pemberitahuan")
3.          Form3.Show()
4.          Me.Close()
5.      ElseIf c2.Checked = True And c4.Checked Then
6.          MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 20",
                MsgBoxStyle.Information, "Pemberitahuan")
7.          Me.Close()
8.      ElseIf c2.Checked = True And c8.Checked Then
9.          MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 20",
                MsgBoxStyle.Information, "Pemberitahuan")
10.         Me.Close()
11.     ElseIf c4.Checked And c8.Checked Then
12.         MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 20",
                MsgBoxStyle.Information, "Pemberitahuan")
13.         Me.Close()
14.     ElseIf c2.Checked = True Then
15.         MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 10",
                  MsgBoxStyle.Information, "Pemberitahuan")
16.         Me.Close()
17.     ElseIf c4.Checked = True Then
18.         MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 10",
                MsgBoxStyle.Information, "Pemberitahuan")
19.         Me.Close()
20.     ElseIf c8.Checked = True Then
21.         MsgBox("Maaf... Jawaban Anda Kurang Tepat, Poin Anda Saat Ini 10",
                MsgBoxStyle.Information, "Pemberitahuan")
22.         Me.Close()
23.     Else
24.         MsgBox("Maaf... Jawaban Anda Tidak Tepat, Poin Anda Saat Ini 0",
                MsgBoxStyle.Critical, "Pemberitahuan")
25.         Me.Close()
26.     End If
```

6. Conclusion

Educational game "TEBU (TEBAK BUDAYA) DALAM MELESTARIKAN KEKHASAN BUDAYA INDONESIA" is learning media for Indonesian people. This game is made by combining texts, pictures, names of traditional housing, traditional dances, and songs using Visual Basic. The flowchart of the game is made using interactive, creative, and effective material so Indonesian people are interested to learn and they can enrich the knowledge about Indonesian culture.

7. References

[1]   Adiati, Maria. (2017). Recognition of Traditional Games in Indonesia as Cultural Preservation Efforts Through Special Event. 10.2991/ictgtd-16.2017.42.

[2]   Onuiri, Ernest & Oludele, Awodele & Udegbe, Andre & Benjamin, Adepoju & Oraibi, Wakama & U. Raymond, Okoro & Komolafe, Oyindolapo. (2015). INDEPENDENT GAME DEVELOPMENT. International Journal of Advance Research. 3. 2320-9194.

[3]   Johnson, Chris & Xiao, Zhiping & Zhang, Ming & McGill, Monica & Bouchard, Durell & Bradshaw, Michael & Bucheli, Victor & Merkle, Laurence & Scott, Michael & Sweedyk, Z. & Ángel, J.. (2016). Game Development for Computer Science Education. 23-44. 10.1145/3024906.3024908.

[4]   Dellyana, Dina. (2011). The Commercialization Of Indonesian Game Developer To International Market. Annual International Conference on Enterprise Marketing and Globalization (EMG 2011), Malaysia.

[5]   P. Soenyoto, *Animasi 2D*. Jakarta: PT. Elex Media Komputindo, 2017.

[6]   Munir, *Multimedia Konsep & Aplikasi Dalam Pendidikan*. 2013.

[7]   Arbianingsih, Rustina, Y., Krianto, T., & Ayubi, D. (2018). Developing a health education game for preschoolers: What should we consider? Enfermería Clínica, 28, 1–4. doi:10.1016/s1130-8621(18)30025-1

[8]   H. M. Jogiyanto, "Analisis & Desain: Pendekatan Terstruktur, Teori dan Praktik Aplikasi Bisnis," *Yogyakarta Andi*, 2005.

[9]   T. H. Cormen and C. E. Leiserson, *Intrduction to Algorithms*, Third. New York, 2009.

[10]   R. Munir, *Algoritma dan Pemrograman*. Bandung: CV Alfabet.