



Date handed out: Monday 07 May 2012

Date submission due: Wednesday 16 May 2012

Project Objectives

The main goal of this project is to help you exercise arrays, functions and control constructs (sequence, selection and repetition). As always, please remember good programming skills when you work on this project:

- Don't try to compile your entire program in one "big bang". Compile it piece by piece. Test each piece that you have compiled to make sure it works correctly before you add the next piece.
- Make sure your code follows "good software engineering principles" (e.g., good variable names, adequate comments, good visual layout to enhance readability, etc), as demonstrated in our previous sample codes in the class.

Purple Shop

Purple Shop is a code-breaker game, which aims to teach children memory, pattern recognition, and reasoning skills. In summary, in this game, the computer decides the color of up to five features (hat, eyes, nose, mouth and clothes) that are concealed from the player. Any color may be used for any feature, and a color can be used once, several times or not used at all. The player then attempts to deduce or guess the correct feature colors in a limited number of moves. There are three difficulty levels: Beginner with three features in three possible colors for $3^3 = 27$ different possible solutions, Intermediate with $4^4 = 256$ solutions, and Advanced with $5^5 = 3125$ solutions.

Requirements:

In this project, you will write a Purple Shop game that will be played between the computer and a player. The computer will be the code-maker and the player will be the code-breaker. The game will be played as follows:

1. Your program will implement two levels of this game: beginner and advance. In the beginner level, there will be three features (hat, eyes, nose) and three possible colours (red, green, blue) and in the advance level, there will be five features (hat, eyes, nose, mouth and clothes), which can be five different colours (red, green, blue, purple, yellow). The user will chose the level of the game and depending on the level, the computer will generate a Purple character with three or five features with assigned colours, which will be concealed from the player.
2. Before the game starts the program needs to ask the level of the game. The program can accept two strings: beginner and advance. If the user enters any other text, then the program needs to give the right error message, and ask the user to enter again.
3. The player is then asked to guess the colours of the features (three for beginner level and five for advance level) of the Purple character.



CNG140 C Programming

4. After the player enters the guesses then your program needs to give the score to the user. The score will mainly report the count of picks in the correct color and position, and the count of picks in the correct color but the wrong position.
5. The game completes after the user either guesses all features with correct colours or if the player guessed 12 times.
6. After this round of the game is completed, your program should ask the user if they would like to continue if they do then your program should generate a new code.

A sample run would be as follows:

```
***PURPLE SHOP GAME***
```

```
Do you want to play beginner or advance level (beginner/advance)? Advance
```

```
Guess 1:
```

```
-----
```

```
Please enter your guess for hat (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1
```

```
Please enter your guess for eyes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Please enter your guess for nose (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 3
```

```
Please enter your guess for mouth (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 4
```

```
Please enter your guess for clothes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 5
```

```
Your score:
```

```
Right Colour, Right Feature: 1
```

```
Right Colour, Wrong Feature: 0
```

```
Guess 2:
```

```
-----
```

```
Please enter your guess for hat (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Please enter your guess for eyes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Please enter your guess for nose (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Please enter your guess for mouth (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Please enter your guess for clothes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 2
```

```
Your score:
```

```
Right Colour, Right Feature: 0
```



CNG140 C Programming

Right Colour, Wrong Feature: 0

Guess 3:

Please enter your guess for hat (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1

Please enter your guess for eyes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1

Please enter your guess for nose (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1

Please enter your guess for mouth (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1

Please enter your guess for clothes (1:red, 2:green, 3:blue, 4:purple, 5:yellow): 1

!!!!!! CONGRATULATIONS! You have won the game with 3 Guesses!!!!

Would you like to play this game again (Y/N)? N

Grading:

Your program will be graded as follows:

Grading Point	Mark (10)
Program generates a code stored in an array, possibly in a function called "MakeCode"	1 point
Get the level of the game (beginner/advance) from the user, with error checking (user can only enter beginner or advance)	1 point
A function is used to get user's guess stored in an array, possibly in a function called "Guess"	2 point
A function is used to check if the code is correct, possibly called "CodeCheck". This should also calculate the scoring.	3 point
A function is used to display the guess, possibly called "DisplayGuess"	1 point
Player wins when the correct guess is make and can make at most 12 wrong guesses	1 points
Player can continue to play the game again and a new code is generated	1 points



MIDDLE EAST TECHNICAL UNIVERSITY, NORTHERN CYPRUS CAMPUS

CNG140 C Programming

Extra Points (5 points):

For visualisation part, if you use extra graphics package to display users' guess graphically on the screen (for example, you can use graphics to display colours or features or a character to represent Purple and her/his features), you will get extra 5 points. You can refer to the original **Purple Shop** game, which is part of the Windows 7: <http://windows.microsoft.com/en-GB/windows7/Purple-Place-how-to-play>.