Programming Assignment 1:
Spring Festival – Phase 2

Phase 2 Due 11:59 pm Wednesday, March 9th

1. Overview

This is phase 2 of your project called "Spring Festival". This project is an exercise in time management and planning (i.e. writing algorithms) as much as it is an exercise in C programming. One of the most important lessons with programming is learning how to do things incrementally – breaking up a big program into smaller components and working on each component one at a time. If you do not get an early start on each phase, it is VERY LIKELY that you will find that you do not have enough time to complete the project.

The C concepts that this phase will give you experience using functions that take in arguments and return values, as well as loops & conditionals, printf & scanf, declaring variables, and using logical expressions. Also, in this phase, you will be exposed to random number generators.

2. Phase 2: Guess My Age

The second carnival event is a "Guess My Age" contest. The user will be prompted to enter his/her age. That integer will be compared to that of a random number generator (supposed to be the guess of the person who is running the booth) which will generate a number within a range of 30 of the actual age. If the guessed age is not within 3 years +- of the contestant's entered age, the contestant wins a teddy bear and is given the chance to go again and possibly win another teddy bear if the person running the booth is a terrible guesser! If the guessed age is within +- 3 of the actual age, the user does not get any more chances to win teddy bears, and a summary is printed to the screen.

Sample output is on the following page.

Your program will have 3 functions in all: the `main()` function, `guess()` function, and a `printResults()` function.

In your main function, the user will be prompted to enter his/her age as an integer. With that input, the `guess()` function will be called. When the guessing is finished, the `printResults()` function will be called.

The prototypes of those two functions should be the following, and should appear at the top of your program:

```
int guess(int theRealAge);
void printResults(int numOfBears);
```

The number entered by the user will be sent as an argument to the `guess()` function, which will seed the random number generator, guess the age, and allow the user to continue with the guessing to get as many teddy bears as possible. Upon a successful guess, or if the user decides not to continue trying to get as many teddy bears as possible, the number of teddy bears won will be returned to the `main()` function. Then the `printResults()` function will be called sending to it the number of teddy bears so that the summary may be printed, and then the program will end.

Your program should compile without warnings and run correctly on the computer science Unix named machines. Your file MUST BE NAMED `guessAge.c`.

The code for your final project will be evaluated not only on its correctness but also on its adherence to the coding style standards. The handout "*Programming Assignment Requirements*" is provided on Blackboard under "Handouts and Other Info" as well as where the assignment appears in the Module. Don't forget to use meaningful variable names, and don't forget about indentation and comments.

3. Sample Output for Phase 2

The following shows three individual sample runs where user input is denoted in ***italics***. In the first two sample runs below, the contestant keeps going until the guesser gets close to the real age, winning as many teddy bears as possible. In the third sample run, the user enters a 0 to not continue after winning only 1 teddy bear. Your statements to the user don't have to be exactly what I have below, as long as they are something that is informative to the user as to what is needed and what is going on.

RUN #1:

```
- * - * - * - * - * - * - * - * - * - * - * - * - * - * - * -
- * - * - * - * - *   GUESS MY AGE    * - * - * - * - * - * -

Enter your age as an integer
24

I guessed 20
which wasn't close enough to your age!

You win a teddy bear!!

Do you want me to try again? (Enter: 1 for Yes, 0 for No) 1

I guessed 28
which wasn't close enough to your age!

You win a teddy bear!!

Do you want me to try again? (Enter: 1 for Yes, 0 for No) 1

I guessed 24
which is within 3 years of your age!  Sorry, no teddy bear this time :(


- * - * - * - * - * - *  SUMMARY  * - * - * - * - * - * - *

You won 2 teddy bears!
```

RUN #2:

```
- * - * - * - * - * - * - * - * - * - * - * - * - * - * - * - * -
- * - * - * - * - *   GUESS MY AGE    * - * - * - * - * - * -

Enter your age as an integer
45

I guessed 58
which wasn't close enough to your age!

You win a teddy bear!!

Do you want me to try again? (Enter: 1 for Yes, 0 for No) 1

I guessed 44
which is within 3 years of your age!  Sorry, no teddy bear this time :(


- * - * - * - * - * - *  SUMMARY  * - * - * - * - * - * - * -

You won 1 teddy bears!
```

RUN #3:

```
- * - * - * - * - * - * - * - * - * - * - * - * - * - * - * - * -
- * - * - * - * - * - *   GUESS MY AGE    * - * - * - * - * - * -

Enter your age as an integer
35

I guessed 48
which wasn't close enough to your age!

You win a teddy bear!!

Do you want me to try again? (Enter: 1 for Yes, 0 for No) 0


- * - * - * - * - * - * - *  SUMMARY  * - * - * - * - * - * - * -

You won 1 teddy bears!
```

4. Notes on Collaboration

You are required to work individually on this assignment. **Please do not consult *anyone* other than me or the lab assistants or the tutor on *any* aspect of this assignment**.