

Winter 2017  
Due April 3

## Computer Science 1510 Assignment #8

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- This assignment requires electronic submission of your source code files. Follow the directions under “Submission Details for All Assignments” on the “Links” tab on the course webpage to submit your assignment.
  - It is not necessary to submit hard (printed) copies of your assignment.
  - Be sure to include sufficient comments in your code, and labels in your output.
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1. Write a program that asks the user for a hexadecimal number represented as a string and read into a string in memory via `scanf`. You should then convert this number into a binary string, and print that string as output.
2. Create a file that has several lines, with several integers per line separated by spaces. Write a program that reads the file line by line, and then tokenizes each string and converts each individual string into an integer. You should then calculate the square of each value and print that to the screen.

For example, if the file was:

```
4 8 9 6
1 4 2
6 6 7 2
```

Then your program should print:

```
16 64 81 36
1 16 4
36 36 49 4
```

3. A palindrome is a word, phrase, number, or other sequence of characters that reads the same backwards as forwards. For example, “No ‘x’ in Nixon”, “A man, a plan, a canal, Panama!”, “Was it a car or a cat I saw?”. In each of these cases, allowances have been made for capital letters and punctuation. Write a C function to determine if a given string of characters is a palindrome. The function should return 1 if the argument is a palindrome and 0 otherwise. Write a C program to read a string from the user and indicate if it is a palindrome by calling your function above. You will find functions such as `tolower` and `isalnum` from `ctype.h` useful to account for allowances such as those indicated above.