**Name:**

**Java Programming**

**Lab Exercise 12.15.2020**

1. The following checksum formula is widely used by banks and credit card companies to validate legal account numbers:

|  |
| --- |
| d0 + f(d1) + d2 + f(d3) + d4 + f(d5) + d6 + ... = 0 (mod 10) |

The di are the decimal digits of the account number and f(d) is the sum of the decimal digits of 2\*d (for example, f(7) = 5 because 2 \* 7 = 14 and 1 + 4 = 5). For example, 17327 is valid because 1 + 5 + 3 + 4 + 7 = 20, which is a multiple of 10. Implement the function f and write a program to take a 10-digit integer and print a valid 11-digit number with the given integer as its first 10 digits and the checksum as the last digit. For the number 1234567891 you should get 12345678911.

1. **SAT scores.** A prominent northeastern university receives 20,000 student applications. Assume that the SAT scores of these individuals is normally distributed with mean 1800 and standard deviation 150. Suppose the university decides to admit the 5,000 students with the best SAT scores. Calculate the lowest score that will still be admitted.

|  |  |
| --- | --- |
|  | http://www.doctordisruption.com/wp-content/uploads/2014/02/725px-The_Normal_Distribution.svg_.png |

The first equation is the curve in the X domain while the second equation is in the Z domain. The two domains are related by the third equation.