

Assignment No. 3

1.

In this exercise program we are interested to input from the keyboard 32, 64, 128, 256, 512, and 1024 bit integers and store their binary representations in memory.

Write a program that can input up to a 1000 digits from the keyboard.

To input each digit use `getc()` function(get character).

Store digits in memory.

Convert this multidigit number to a binary representation and then store it in memory.

Print out the numbers in binary.

2.

Write a program to compute

$$M^{Q \bullet P} \bmod N$$

where M,P,Q,N are integers of sizes 32, 64, 128, 256, 512, 1024 bits.

Measure and print out computation times for each integer size.

Run the above program on two computers with different processors.

Compare the results.

3. The purpose of this program is to understand and experience the limits of standard data types when dealing with irrational numbers. Each standard data type has its min and max values. Thus the number of digits representing irrational number is limited(precision is limited).

Write a program that computes and stores in memory any specific irrational number(choose any number you like) with a desired degree of precision.

For example, you can compute Pi with 10, 20, 100, 200, 300, 400 digits after the decimal point.

Measure and report the computation time.