# CSSE 132 – Introduction to Systems Programming
## Rose-Hulman Institute of Technology

## Homework 1

Name (Print):_____ RHIT Username:_____

Put your answers in the spaces reserved below the questions. **Do not** write your answers on **separate sheets of paper**.

1. (6 points) Convert the following decimal numbers to their 16-bit **unsigned** binary and hexadecimal representations. You **must show your work** in the dec-to-bin (or dec-to-hex) conversion to earn full credit. You may use a calculator to confirm your answers.

   1.1 $\boxed{65533}$
   Binary: Hexadecimal:

   1.2 $\boxed{256}$
   Binary: Hexadecimal:

2. (6 points) Convert the following decimal numbers to their 16-bit **signed** binary and hexadecimal representations. You **must show your work** in the dec-to-bin (or dec-to-hex) conversion to earn full credit. You may use a calculator to confirm your answers.

   2.1 `-298`
   Binary: *(HINT: Use the shortcut)* Hexadecimal:

   2.2 255
   Binary: Hexadecimal:

3. (6 points) Convert the following **unsigned** 16-bit binary numbers to their hexadecimal *and* decimal representations. You **must show your work** while converting to decimal to earn full credit. You may use a calculator to confirm your answers.

   3.1 `0010 0111 1001 0000`
   Hexadecimal: Decimal:

   3.2 `0001 1111 1111 1111`
   Hexadecimal: Decimal:

4. (6 points) Convert the following **signed** 16-bit binary numbers to their hexadecimal *and* decimal representations. You **must show your work** while converting to decimal to earn full credit. You may use a calculator to confirm your answers.

   4.1 `1000 0000 0000 0000`
   Hexadecimal: Decimal:

   4.2 `1110 1111 1011 1101`
   Hexadecimal: Decimal (*Hint: Use the shortcut)*:

5. (6 points) Convert the following **unsigned** 16-bit hexadecimal numbers to their decimal *and* binary representations. You **must show your work** while converting to decimal to earn full credit. You may use a calculator to confirm your answers.

   5.1 `0x12BD`
   Decimal: Binary:

   5.2 `0x1EE7`
   Decimal: Binary:

6. (6 points) Convert the following **signed** 16-bit hexadecimal numbers to their decimal *and* binary representations. You **must show your work** while converting to decimal to earn full credit. You may use a calculator to confirm your answers.

   6.1 `0xFFFF`
   Decimal: Binary:

   6.2 `0xEC00`
   Decimal: Binary: