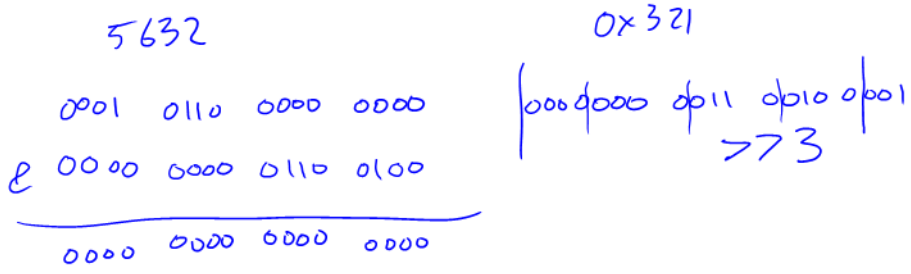
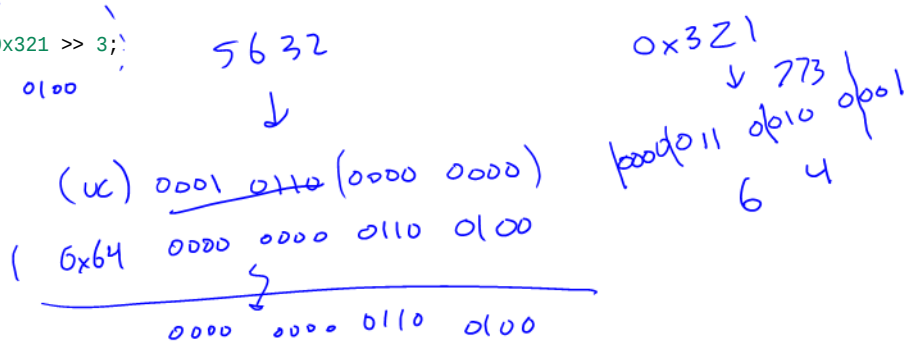
CMPE1250 – Understanding Bitwise Expressions and Types in C

Answer the following questions. **You must show all work** for any multi-step operations. Indicate any truncations, precedence*, and associativity* rules/events at the relevant steps. You may use a calculator to convert values, but a calculator may only be used to validate steps in every other circumstance.

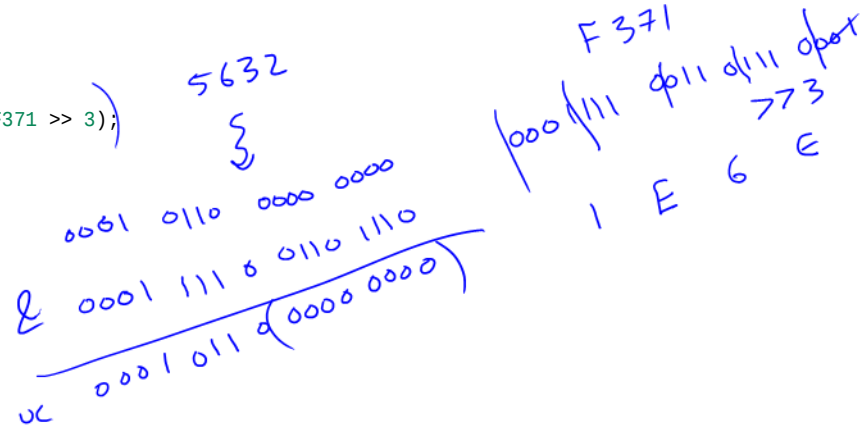
```
// Q1
{
  unsigned int i = 5632 & 0x321 >> 3;
  // what is i in binary
  // what is i in hex
  // what is i in decimal
}
```



```
// Q2
{
  unsigned int i = (unsigned char)5632 | 0x321 >> 3;
  // what is i in binary
  // what is i in hex
  // what is i in decimal
}
```

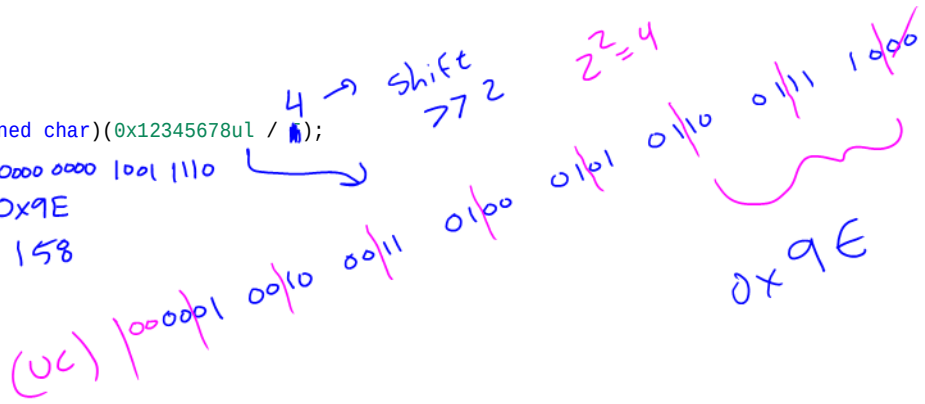


```
// Q3
{
  unsigned char i = (unsigned char)(5632 & 0xF371 >> 3);
  // what is i in binary
  // what is i in hex
  // what is i in decimal
}
```

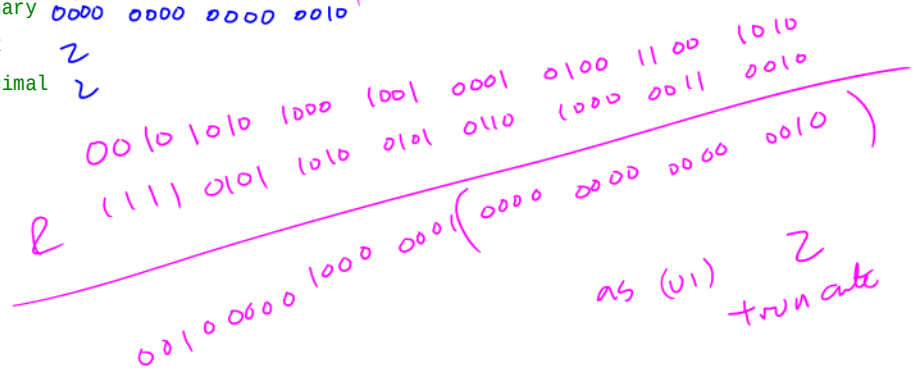


*https://docs.microsoft.com/en-us/cpp/c-language/precedence-and-order-of-evaluation?view=msvc-160

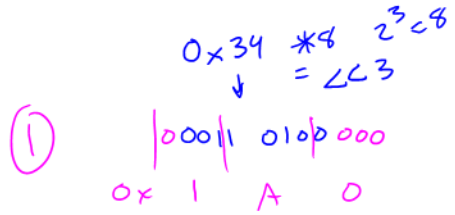
```
// Q4
{
  unsigned int i = (unsigned char)(0x12345678ul / 16);
  // what is i in binary 0000 0000 1001 1110
  // what is i in hex    0x9E
  // what is i in decimal 158
}
```

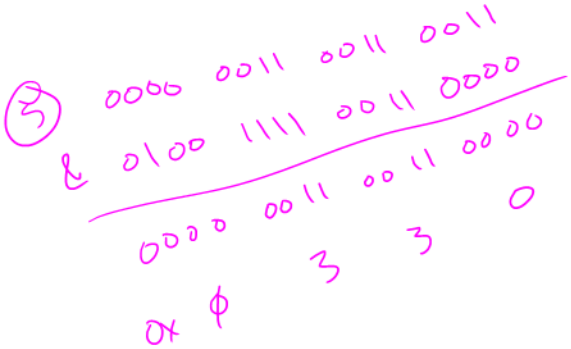


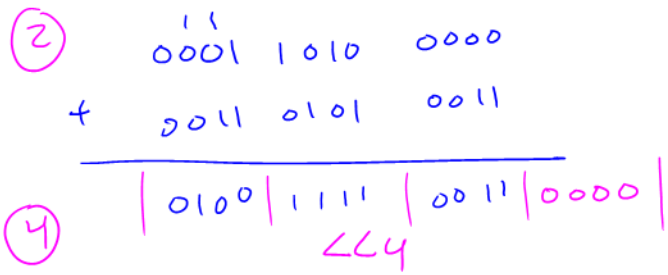

```
// Q5
{
  unsigned int i = 0b10101010001001000101001100101010 >> 2 & 0xF5A56832u;
  // what is i in binary 0000 0000 0000 0010
  // what is i in hex    2
  // what is i in decimal 2
}
```




```
// Q6
{
  unsigned int i = ((8 * 0x34) + 0b1101010011 << 4 & 0b110011001100 >> 2;
  // what is i in binary 0000 0011 0011 0000
  // what is i in hex    0x0330
  // what is i in decimal 816
}
```







*https://docs.microsoft.com/en-us/cpp/c-language/precedence-and-order-of-evaluation?view=msvc-160