

### Problem 3. (8 points):

The following procedure takes a single-precision floating point number in IEEE format and prints out information about what category of number it is. Fill in the missing code so that it performs this classification correctly.

```
void classify_float(float f)
{
    /* Unsigned value u has same bit pattern as f */
    unsigned u = *(unsigned *) &f;
    /* Split u into the different parts */
    int sign = (u >> 31) & 0x1;    // The sign bit

    int exp = _____;    // The exponent field

    int frac = _____;    // The fraction field

    /* The remaining expressions can be written in terms of the
    values of sign, exp, and frac */

    if (_____)
        printf("Plus or minus zero\n");

    else if (_____)
        printf("Nonzero, denormalized\n");

    else if (_____)
        printf("Plus or minus infinity\n");

    else if (_____)
        printf("NaN\n");

    else if (_____)
        printf("Greater than -1.0 and less than 1.0\n");

    else if (_____)
        printf("Less than or equal to -1.0\n");
    else
        printf("Greater than or equal to 1.0\n");
}
```