A1 - Readiness Exercise

One point for each question. Please upload **a PDF file** (named **hw1_[your first name].pdf**) containing **only** answers. Please attach a screenshot for Q10 to your PDF report as well.

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1. Explain why the output of the following code snippet is 0.

```
unsigned int i = 0;

printf("%u", i--);
```

2. Explain why the output of the following code snippet is "char=1, int=4, long=8" in x86 (64-bit).

```
printf("char=%d, int=%d, long=%d", \
    sizeof(char), sizeof(int), sizeof(long));
```

3. Explain why the output of the following code snippet is "st0 = 8, st1 = 8".

```
struct st0 {
    int x;
    char y;
};
struct st1 {
    int x;
    char y;
    char z;
};
int main()
{
    printf("st0 = %d, st1 = %d\n",
    sizeof(struct st0), sizeof(struct st1));

}
```

4. Explain why the output of the following code snippet is 0xEF.

```
int64_t v = 0xdeadbeef;

printf("%02x", ((char *)&v)[0]);
```

5. Explain why the output of the following code snippet is "i=5, j=10".

```
int main ()
{
    int i, j, *p, *q;
    p = &i;
    q = &j;
    *p = 5;
    *q = *p + i;
    printf("i = %d, j = %d\n", i, j);
    return 0;

}
```

6. Explain why the value of NULL (64-bit) is 0x0000000000000000.

7. Explain why the output of the following code is 0x124000.

```
#define PGSIZE 4096
#define CONVERT(sz) (((sz)+PGSIZE-1) & ~(PGSIZE-1))

printf("0x%x", CONVERT(0x123456));
```

8. Assuming the first printf results "1 = 0x7fffdfbf7f00", explain why the rest of the output is as follows:

```
2 = 0x7fffdfbf7f04
3 = 0x7fffdfbf7f00
4 = 0x7fffdfbf7f14
main() {
    int x[5];
```

```
    printf("1 = %p\n", x);
    printf("2 = %p\n", x+1);
    printf("3 = %p\n", &x);
    printf("4 = %p\n", &x+1);
    return 0;
}
```

9. Explain the purpose of the following command on a Linux shell.

```
ssh-keygen -t rsa -b 2048 -f ~/.ssh/id_rsa -N ""
```

10. Please attach the screenshot of the **tig** of your Linux git repository on your Linux virtual machine.