

Week 5: Homework Solutions

```
3. def factorial(n):
    """Calculate n factorial."""
    product = 1
    for i in range(1, n + 1):
        product = product * i
    return product

def binomial(n, k):
    """Calculate n choose k."""
    return factorial(n) // (factorial(n-k) * factorial(k))

rows = int(input("How many rows? "))
for n in range(rows):
    # print the right number of tabs at the start of the row
    print("\t"*(rows-n-1), end="")
    for k in range(n):
        print(binomial(n, k), end="\t\t")
    print(binomial(n, n), end="\n")
```

To do the more adventurous bit, we keep the functions the same and change the main part of the program to be as follows.

```
rows = 32
for n in range(rows + 1):
    print(" "*(rows-n-1), end="")
    for k in range(n + 1):
        if binomial(n, k) % 2 == 1:
            print("*", end=" ")
        else:
            print(" ", end=" ")
    print("")
```

The output is over the page.

