1. (40 points) Name:

2. (40 points) Consider the following factorial function:

```c
int fact(int n)
{
    if (n == 0) {
        return 1;
    }
    int r = n * fact(n - 1);
    return r;
}

int main()
{
    return fact(2);
}
```

Draw the contents of the stack, showing the activation record instances. Draw the stack at its largest extent.

**Answer:**

![Stack Diagram](image)

3. (20 points) Why do we need static links? Why do we need dynamic links?
Answer:
Dynamic links show calling sequence. For Dynamic scoped languages, they can be used for accessing non-locals. For both Static and Dynamic scoped languages, they show the stacktrace when an exception or error occurs.

Static links show ancestor (parent child) relationships between (nested) subprograms. Static links can be used for accessing non-locals in Static scoped languages.