Tutorial 1 - Process Creation and Scheduling

1.Calculate the number of times hello is printed:

```c
#include <stdio.h>
#include <sys/types.h>
int main()
{
    fork();
    fork();
    fork();
    printf("hello\n");
    return 0;
}
```

2. How many processes are created by the program? Draw the process hierarchy.

```c
int main(){
   int i;
   for(i=0;i<4;i++)
     fork();
   return 0;
}
```

3. Predict the output

```c
#include <sys/types.h>
#include <unistd.h>

void forkexample()
{
    int x = 1;

    if (fork() == 0)
        printf("Child has x = %d\n", ++x);
    else
        printf("Parent has x = %d\n", --x);
}
int main()
{
    forkexample();
    return 0;
}
```

4. What is the output of the following program? Draw the process hierarchy also.

```c
#include <stdio.h>
#include <unistd.h>

int main()
{
    if (fork()) {
        if (!fork()) {
            fork();
            printf("1 ");
        }
        else {
            printf("2 ");
        }
    }
    else {
        printf("3 ");
    }
    printf("4 ");
    return 0;
}
```

5. Draw the process hierarchy and predict the output.

```c
#include <stdio.h>
#include <unistd.h>

int main()
{
    if (fork() && (!fork())) {
        if (fork() || fork()) {
            fork();
        }
    }
    printf("2 ");
    return 0;
}
```

6. Draw the Gantt charts illustrating the execution of these processes using a)FCFS b)SJF C) SRTF. Also calculate average waiting time and average turn around time in each and every algorithms.

Process	CPU Burst Time	Arrival Time
P1	5	0
P2	2	3
P3	4	5
P4	3	7