Operating System Exam Preparation

- Question Solution
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Resources: https://drive.google.com/drive/folders/15gq-_qAjUjGZS9__UMdeoUWU0Rdppgte?usp=sharing

Question 2017

Question#1:

a) **Operating System (OS)** is a system software which manages computer resources (harware, software) and provides an environment where application software can run in order to full-fill users' demands.

Service Of OS: Slide-1 (Function of OS)

b) PCB : Slide-2 (Intro Process) c) Kernel: the one program running at all times on the computer.

Question#2:

```
a, c, d Solutions are in Slide - 2
```

b) Added Soon

Question#3:

a. Solution

```
            P1
          /    \
        /       \
      c1          p1
    / \          /  \
   /   \        /    \
  c2   c1      C3     P1
```

b. Solution

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

int main() {
    int a = 5;
    pid_t cid, mypid;
```

```
    mypid = getpid();
    cid = fork();

    if (cid == 0) {
        printf("My PID: %d and my parents pid = %d\n", mypid, getppid());
// different
        a = a - 5;
        printf("a = %d\n", a); // 0
    } else {
        printf("My PID: %d and my parents pid = %d\n", mypid, getppid());
// same
        a = a + 5;
        printf("a = %d\n", a); // 10
        while(1);
    }
}
```

1. Continue execute

My PID: 185778 and my parents pid = 185586 a = 10
My PID: 185778 and my parents pid = 185778 a = 0

2.

- a. Stop Execution - Same output
- b. Show output and wait : Orphan child, parent kill
- c. Stop execution - same output
- d. Continue Execution - same output

Question#4

b.

```
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>



int main() {
    int x = 5;
    printf("Hello %d\n", getpid());
    execlp("/bin/cat", "/bin/cat", "./Hi.c", NULL);
    printf("%d + 2 : %d\n", x, x + 2);
}
```

Output:

```
Output: Hello 186943
#include <stdio.h>

int main() {
    printf("I executing through child process.\n");
}
```