OS Lab06

`Author: Dipankar Das`

`Date: 31-3-2022`

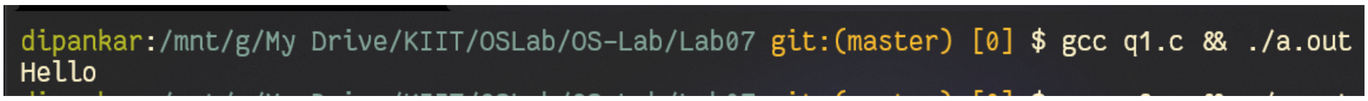
`Roll: 20051554`

Question 1

Solution

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

int main() {
  int fd[2];
  char message[10] = {0};
  assert(pipe(fd) == 0);
  write (fd[1], "Hello", 5);
  read(fd[0], &message, 5);
  printf("%s\n", message);
}
```

Output



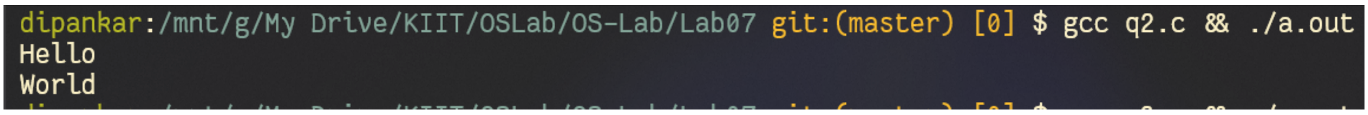
```
dipankar:/mnt/g/My Drive/KIIT/OSLab/OS-Lab/Lab07 git:(master) [0] $ gcc q1.c && ./a.out
Hello
```

Question 2

Solution

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

int main() {
  int fd[2];
  char message[10] = {0};
  assert(pipe(fd) == 0);
  write (fd[1], "Hello", 5);
  read(fd[0], &message, 5);
  printf("%s\n", message);
  write(fd[1], "World", 5);
  read(fd[0], &message, 5);
  printf("%s\n", message);
}
```

Output



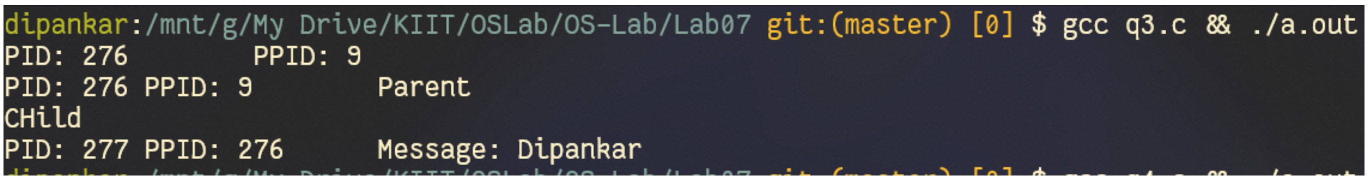
```
dipankar:/mnt/g/My Drive/KIIT/OSLab/OS-Lab/Lab07 git:(master) [0] $ gcc q2.c && ./a.out
Hello
World
```

Question 3

Solution

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

int main() {
  printf("PID: %d\tPPID: %d\n",getpid(), getppid());
  int fd[2];
  char message[10] = {0};
  assert(pipe(fd) == 0);

  pid_t id = fork();
  assert(id >= 0);
  if (id > 0) {
    // parent
    close(fd[0]);
    printf("PID: %d PPID: %d\tParent\n", getpid(), getppid());
    write(fd[1], "Dipankar", 8);
    wait(NULL);
  } else {
    close(fd[1]);
    printf("CHild\n");
    read(fd[0], &message, 10);
    printf("PID: %d PPID: %d\tMessage: %s\n", getpid(), getppid(), message);
  }
  return 0;
}
```

Output



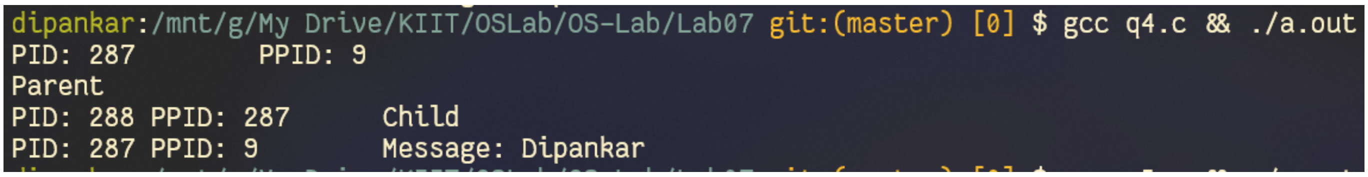
```
dipankar:/mnt/g/My Drive/KIIT/OSLab/OS-Lab/Lab07 git:(master) [0] $ gcc q3.c && ./a.out
PID: 276        PPID: 9
PID: 276 PPID: 9        Parent
CHild
PID: 277 PPID: 276      Message: Dipankar
```

Question 4

Solution

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

int main() {
  printf("PID: %d\tPPID: %d\n",getpid(), getppid());
  int fd[2];
  char message[10] = {0};
  assert(pipe(fd) == 0);

  pid_t id = fork();
  assert(id >= 0);
  if (id > 0) {
    // parent
    close(fd[1]);
    printf("Parent\n");
    read(fd[0], &message, 10);
    printf("PID: %d PPID: %d\tMessage: %s\n", getpid(), getppid(), message);
    wait(NULL);
  } else {
    close(fd[0]);
    printf("PID: %d PPID: %d\tChild\n", getpid(), getppid());
    write(fd[1], "Dipankar", 8);
  }
  return 0;
}
```

Output



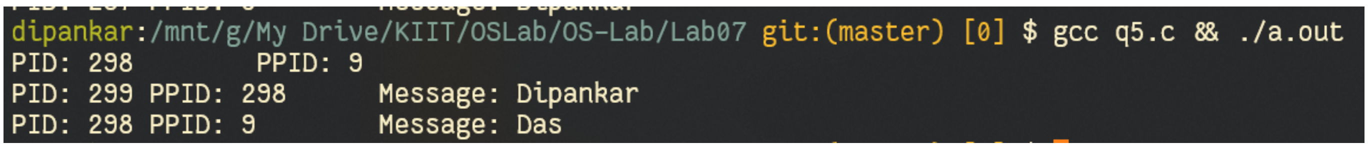
```
dipankar:/mnt/g/My Drive/KIIT/OSLab/OS-Lab/Lab07 git:(master) [0] $ gcc q4.c && ./a.out
PID: 287        PPID: 9
Parent
PID: 288 PPID: 287      Child
PID: 287 PPID: 9        Message: Dipankar
```

Question 5

Solution

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

int main() {
  printf("PID: %d\tPPID: %d\n",getpid(), getppid());
  int fd1[2];
  int fd2[2];
  char message[10] = {0};
  assert(pipe(fd1) == 0);
  assert(pipe(fd2) == 0);

  pid_t id = fork();
  assert(id >= 0);
  if (id > 0) {
    // parent
    close(fd1[0]);
    write(fd1[1], "Dipankar", 8);


    wait(NULL);

    close(fd2[1]);
    read(fd2[0], message, 10);
    printf("PID: %d PPID: %d\tMessage: %s\n", getpid(), getppid(), message);

  } else {

    close(fd1[1]);
    read(fd1[0], message, 10);
    printf("PID: %d PPID: %d\tMessage: %s\n", getpid(), getppid(), message);

    // second message
    write(fd2[1], "Das", 3);
  }
  return 0;
}
```

Output



```
dipankar:/mnt/g/My Drive/KIIT/OSLab/OS-Lab/Lab07 git:(master) [0] $ gcc q5.c && ./a.out
PID: 298        PPID: 9
PID: 299 PPID: 298      Message: Dipankar
PID: 298 PPID: 9        Message: Das
```