

1. 2016-1a

Circle or cross: "T" if True – "F" if False.

- T / F A bus is a CPU system that transfers data between components inside a computer, or between computers (WIKI).
- T / F Port-mapped I/O uses the same address bus to address both memory and I/O devices (WIKI).
- T / F The kernel I/O subsystem is the largest part of a kernel system (Silber9).
- T / F Performance can be improved by utilizing dedicated hardware and hard-coded algorithms (Silber9).
- T / F Embedded algorithms in a device controller could conflict with the applications, causing decreased performance (Silber 9).
- T / F Polling for an I/O completion can waste a large number of CPU cycles if the processor iterates a busy-waiting loop many times before the I/O completes (Silber9).
- T / F DMA (Direct Memory Access) increases system concurrency (Silber9).
- T / F The STREAMS driver modifies the flow of data between the user interface and the driver (Silber9).
- T / F Device driver encapsulate device details to avoid uniform device-access interface to I/O subsystem (Silber9).
- T / F An asynchronous process suspended until I/O completed (Silber9).

2. 2016-1b

Lingkari atau beri silang huruf "B" jika betul, dan "S" jika salah.

```
001 /* (c) 2015-2019 Rahmat M. Samik-Ibrahim      *
002 * R: 27-Feb-2019  -- This is free software */
004 #include <stdio.h>
005 #include <string.h>
006 #include <unistd.h>
007 #include <fcntl.h>
008 #include <sys/types.h>
009 #include <sys/stat.h>
010
011 char *string = "ABCD\n";
012 void main(void) {
013     int  fileDescriptor;
014     close(STDOUT_FILENO);
015     fileDescriptor = open ("output.txt", O_RDWR|O_CREAT|O_TRUNC, 0644);
016     printf (          "%s", string);
017     write(fileDescriptor, string, strlen(string));
018 }
```

- B / S** Tanpa baris 004 - 009, program akan tetap dapat dikompilasi tanpa kesalahan (error).
- B / S** Pointer "string" (baris 011) merupakan variabel global.
- B / S** Deklarasi "main(void)" (baris 12) artinya: tidak ada "passing argument" ke dalam fungsi main().
- B / S** Pada saat program dieksekusi, secara otomatis file descriptor dari streams stdin=0 (STDIN_FILENO), stdout=1 (STDOUT_FILENO), dan stderr=2 (STDERR_FILENO).
- B / S** Baris 14 akan menutup stream STDOUT_FILENO (1).
- B / S** Nilai "fileDescriptor" = 1 (baris 15), akibat baris no 14.
- B / S** Jika berkas "output.txt" tidak ada (baris 15), maka fungsi open() akan membuat berkas "output.txt" baru.
- B / S** Jika sudah ada berkas "output.txt" (baris 15), maka fungsi open() akan membuka berkas dengan mode menambah (append).
- B / S** Fungsi "printf()" (baris 16) akan menulis "ABCD\n" ke layar monitor.

Isi semula berkas "output.txt" ialah "XXXX\n"; maka setelah program dieksekusi akan berisi:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3. 2017-1

C Programming																																							
001 /*	020 static char* str1 = "AABB\n";																																						
002 * (c) 2017 Rahmat M. Samik-Ibrahim --	021 static char* str2 = "CCDD\n";																																						
This is free software	022 static char* str3 = "EEFF\n";																																						
003 * REV00 Thu Mar 30 16:56:54 WIB 2017	023																																						
004 * START Thu Mar 30 16:56:54 WIB 2017	024 void main(void) {																																						
005 *	025 int fd1, fd2, fd3;																																						
006 * fd2=dup(fd1) duplicates fd1 to fd2	026 /* STDIN=0, STDOUT=1, STDERR=2, therefore																																						
007 * O_RDWR Open the file so that it can be read	027 fd1, fd2, fd3 will be 3, 4, and 5 */																																						
from and written to.	028 fd1 = open (FILE, O_TRUNC O_RDWR O_CREAT, 0644);																																						
008 * O_TRUNC Initially clear all data from the file.	029 fd2 = open (FILE, O_TRUNC O_RDWR O_CREAT, 0644);																																						
009 * O_CREAT If the file does not exist, create it.	030 fd3 = dup(fd2);																																						
010 */	031 printf("fd1=%d, fd2=%d, fd3=%d\n", fd1, fd2, fd3);																																						
011	032 write(fd1, str1, strlen(str1));																																						
012 #include <stdio.h>	033 write(fd2, str2, strlen(str2));																																						
013 #include <unistd.h>	034 write(fd3, str3, strlen(str3));																																						
014 #include <sys/types.h>	035 close(fd1);																																						
015 #include <sys/stat.h>	036 close(fd2);																																						
016 #include <fcntl.h>	037 close(fd3);																																						
017 #include <string.h>	038 }																																						
018 #define FILE "uts2017-1.txt"																																							
Program Output (Line 031):																																							
<table border="1"> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>																																							
Content of file "uts2017-1.txt"																																							
<table border="1"> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>																																							

