OS Problem Sheet #6
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Problem 6.1
FCFS

Process	Arrival a	Execution c	e	t	w
A	0	7	7	7	0
B	3	5	12	9	4
C	5	9	21	16	7
D	8	3	24	16	13
E	10	1	25	15	14
F	12	2	27	15	13

Average turnaround time = 78/6 = 13

Average waiting time = 51/6 = 8.5

SPTF

Process	Arrival a	Execution c	e	t	w
E	10	1	11	1	0
F	12	2	14	2	0
D	8	3	17	9	6
B	3	5	22	19	14
A	0	7	29	29	22
C	5	9	38	33	22

Average turnaround time = 93/6 = 15.5

Average waiting time = 64/6 = 10.6

LPTF

Process	Arrival a	Execution c	e	t	w
C	5	9	14	9	0
A	0	7	21	21	14
B	3	5	26	23	18
D	8	3	29	21	18
F	12	2	31	19	17
E	10	1	32	22	21

Average turnaround time = 19.2

Average waiting time = 88/6 = 14.7

Round Robin

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	A	A		A			A						A					A								
			B		B			B							B				B							
						C			C							C				C		C	C	C	C	C
										D							D				D					
											E															
												F					F									

Process	Arrival a	Execution c	e	t	w
A	0	7	19	19	12
B	3	5	20	17	12
C	5	9	27	22	13
D	8	3	22	14	11
E	10	1	12	2	1
F	12	2	18	6	4

Average turnaround time = 80/6 = 13.3

Average wait time = 53/6 = 8.8

Problem 6.2

a)

File	Symbol	Internal unlinkable symbol	Reference of external symbol	Weak linkable symbol	Strong linkable symbol
a.c	x		X		
a.c	y	X			
a.c	f				X
a.c	g			X	
a.c	h			X	
b.c	x	X			
b.c	y				X
b.c	z				X
b.c	f			X	
b.c	g		X		

b) b.c: f()
b.c: g()
a.c: h()
a.c: g()
a.c: f()
main calls f(), which exists in a.c and b.c, but in a.c it only exists privately so only b.c is called
b.c f() calls g()
b.c g() calls h() which exists in a.c
a.c g() calls g() privately and works
a.c f() executes

c) Name mangling is declaring a function or variable name as a unique name so that linkers can separate common names in the language, it is mostly used for the overloading feature and helps its visibility in different scopes.
Using extern "C" {} in C++ header files helps the linker distinguish the language style desired for output, as some libraries from c or c++ were not made for the other language.