TBM 1: Prepare Assembly Aid Tray for Force Fitting

Team name:		
Referee I:, Referee II:		
Date and time:		
Duration: □ Timeout		
Achievements		
The robot correctly identifies the assembly aid tray QR code Comment:	yes	no
The robot correctly identifies the containers QR code Comment:		
The robot correctly grasps the assembly aid tray: Comment:		
The robot correctly grasps the first bearing box: Comment:		
The robot correctly grasps the second bearing box: Comment:		
The robot inserts the first bearing box into the aid tray: Comment:		
The robot inserts the second bearing box into the aid tray: Comment:		
The robot correctly deliver the tray to the force fitting station: Comment:		
The robot completely processes the first bearing (from identifying to delivering): Comment:		
The robot completely processes the second bearing (from identifying to delivering): Comment:		
The robot cooperates with CFH and Networked Devices throughout the task: Comment:		
Benchmarking data is delivered appropriatly Comment:		

Penalized Behaviors	
The robot bumps into obstacles in the test bed:	
The robot drops an object (the object touches the ground):	
The robot stops working:	
Disqualifying Behaviors	
The robot damages or destroys the objects requested to man	nipulate:
The robot damages the test bed:	
Comment:	
WARNING: A disqualifying behavior discards all other achievements in the current when it is really necessary (e.g. cheating).	task. Use it only
Team leader signature:	
Referee signature:	

TBM 2: Plate Drilling

Team name:				
Referee I:	, Referee II:			
Date and time:				
Duration: □	Γ imeout			
faulty-faulty (yes, specifica	ized in the conveyor belt with the ally in this order). The reasoning processing faulty ones. As such t	g is because proce	essing unu	ısable
Achievements				
The robot places an unusal The robot collects the achie	sable cover plate from the conveyed ble cover plate inside the trash bo	x container	plate 1	plate 2
The robot inserted a faulty The robot collects the achie	cover plate from the conveyor be cover plate into the drilling mach	nine	plate 1	plate 2
The robot picks up a perfect. The robot places a perfect. The robot collects the achie	ling machine to fix a faulty cover et cover plate in the drilling mach cover plate inside the cover plate	ine box	plate 1	plate 2
	CFH and Networked Devices throered appropriately			
Comment:				
Penalized Behaviors				
The robot bumps into obsta	acles in the test bed:			
The robot drops an object	(the object touches the ground):			
The robot stops working:				

Disqualifying Behaviors The robot damages or destroys the objects requested to manipulate: The robot damages the test bed: Comment: WARNING: A disqualifying behavior discards all other achievements in the current task. Use it only when it is really necessary (e.g. cheating). Team leader signature: Referee signature:

TBM 3: Fill a Box with Parts for Manual Assembly

Team name:						
Referee I:	, Refere	ee II: _				
Date and time:						
Duration: □ Timeout						
Achievements						
The robot picks up a required object or container from its storage location: Comment:			part 3	part 4	part 5	\Box
The robot places required objects into the container: Comment:						-
The robot delivers a correctly filled container at the designated workstation: Comment:						-
The robot cooperates with CFH and Ne Comment:			_		task:	yes no
Benchmarking data is delivered appropriately Comment:	~					 _
Penalized Behaviors						
The robot bumps into obstacles in the t	est bed:					
The robot drops an object (the object t	ouches t	he groun	ıd): □[
The robot stops working:						
Disqualifying Behaviors						
The robot damages or destroys the objection	ects requ	ested to	manipul	ate:		
The robot damages the test bed:						
Comment: WARNING: A disqualifying behavior discards all other when it is really necessary (e.g. cheating).	achievemen	nts in the cu	irrent task.	Use it only		
Team leader signature:						
Referee signature:						

FBM 1: Object Perception

Referee	I:	, Re	feree II: _			
Date an	nd time:					
Notes:						
• Th	e duration is based on	the referee sto	p watch.			
	meout is checked when ration.	the robot car	nnot detec	t the object	within the	specified test
• GT	is the ground truth w	which is the infe	ormation p	rovided by t	the referee b	OX.
• Ob	ject identifier:					
-	– EM-01(1)=aid tray,	EM-02(2) = cov	er plate bo	ΟX		
	- AX-01(4)=bearing b				me B	
	- AX-02(6)=bearing,	· -	` /	· ·	ров	
	1111 02(0) 50011118,	111 00(1) 11100	,01, 1111 00	(9) (1111)		
Run 1 I	Ouration:	☐ Timeout				
Object I	Detection					
CT	Container	Bearing	g Box		Transmissio	n
GT	EM-01(1) EM-02(2	()	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)
Robot	Container	Bearin			Transmissio	
	EM-01(1) EM-02(2	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)
Pose			11 11		T	
GT	х у	θ	Robot	X	У	θ
Commen	ts:					
Run 2 I	Ouration:	☐ Timeout				
Object I	Detection					
GT	Container	Bearing	_	II	Transmissio	
	EM-01(1) EM-02(2		AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)
Robot	$\begin{array}{ c c c }\hline Container\\\hline EM-01(1) & EM-02(2\\\hline \end{array}$	Bearin AX-01(4)	$\frac{\text{g box}}{\text{AX-16(3)}}$	AX-02(6)	$\frac{\text{Transmissio}}{\text{AX-09(7)}}$	n AX-03(5)
Pose			()	11 (2)		1 7
GT	x y	θ	Dolor	X	у	θ
C = 1	H		Robot		-	+

Joject L	Octoction							
	Detection		·		П			
GT	Conta		Bearin		III.	Transmission		
0.1	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Robot	Conta	ainer	Bearin	g box		Transmission	n	
TODOU	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Pose								
- CTF	X	у	θ	D 1 .	X	у	θ	
GT				Robot		V		
Common	its:							
Jonninen								
Run 4 I	Ouration:	Г] Timeout					
Object L	Detection							
GT	Conta		Bearin	<u> </u>	-	Transmission		
01	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Robot	Container		Bearing box			Transmission		
Robot	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Pose					-11			
	37	77	θ		37	37	θ	
GT	X	У	0	Robot	X	У	U	
Commen	its:							
Run 5 I	Ouration:] Timeout					
Object I	Detection							
	Conta	ainer	Bearing Box		Transmission			
GT	EM-01(1)	EM-02(2)	AX-01(4)	$\frac{AX-16(3)}{AX-16(3)}$	AX-02(6)	AX-09(7)	$\frac{1}{\text{AX-03(5)}}$	
	Conta	` ,	Bearin	. ,		Transmission		
Robot	EM-01(1)	EM-02(2)	AX-01(4)	$\frac{\text{AX-16}(3)}{\text{AX-16}(3)}$	AX-02(6)	AX-09(7)	$\frac{1}{ AX-03(5) }$	
	DW-01(1)	DW-02(2)	1121-01(4)	7171-10(0)	1111-02(0)	1171-03(1)	1171-05(0)	
Pose			θ		v	37	θ	
Pose GT	X	У	0	Robot	X	У	U	

	$\frac{\text{Detection}}{\ }$	ainer	Bearin	g Roy		Transmission		
GT	EM-01(1)		AX-01(4)	$\frac{\text{g box}}{\text{AX-16(3)}}$	AX-02(6)	AX-09(7)	AX-03(5)	
	Cont	` '	Bearin	. ,	` ′	Transmissio		
Robot	EM-01(1)	$\frac{\text{EM-02}(2)}{\text{EM-02}(2)}$	AX-01(4)	$\frac{\text{AX-16}(3)}{\text{AX-16}(3)}$	AX-02(6)	AX-09(7)	AX-03(5)	
Pose		2111 02(2)	1111 01(1)	1111 10(0)	1111 02(0)	1111 00(1)	1111 00(0)	
	X	у	θ		X	у	θ	
GT	A .	J J		Robot	A	J J		
 Comme	nts:							
Run 7	Duration:] Timeout					
Object 1	Detection							
OTT.	Cont	ainer	Bearing Box			Transmission		
GT	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Robot	Cont	ainer	Bearin	g box		Transmissio	n	
πουσι	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Pose								
GT	X	У	θ	Robot	X	У	θ	
Comme	nts:							
Run 8	Duration:	Г] Timeout					
			1 Imeout					
Jbject 1	Detection							
GT	Cont		Bearin			Transmissio		
O I	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
———	Cont		Bearin AX-01(4)	~		Transmissio		
Robot	EM 01(1)		AA-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Robot	EM-01(1)	EM-02(2)						
	EM-01(1)	EMI-02(2)						
Robot	EM-01(1)	у у	θ	Robot	X	у	θ	

Run 9 I	Ouration:] Timeout					
Object I	Detection							
GT	Cont	ainer	Bearin	ig Box		Transmission		
GI	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Dobot	Cont	ainer	Bearin	ng box		Transmission	n	
Robot	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Pose								
C/T	x	у	θ	Dalas	X	у	θ	
GT				Robot				
	nts: Duration: _		□ Timeout					
	Detection =							
C/T/	Cont	ainer	Bearin	ıg Box		Transmission	n	
GT	EM-01(1)	EM-02(2)	AX-01(4)		AX-02(6)	AX-09(7)	AX-03(5)	
Robot	Cont	ainer	Bearin	ng box		Transmission	n	
Robot	EM-01(1)	EM-02(2)	AX-01(4)	AX-16(3)	AX-02(6)	AX-09(7)	AX-03(5)	
Pose								
GT	X	У	θ	Robot	X	у	θ	
Commen	nts:							
Benchn	narking dat	a delivered	l appropria	ately: 🗆 ye	es / 🗆 no			
Team le	eader signa	ture:						
Referee	signature:							

FBM 2: Manipulation

Team name:			
Referee I:	, Refere	ee II: _	
Date and time:			
Notes:			
• The duration for ea	ach run is based on the r	eferee s	top watch.
• Timeout is checked duration.	d when the robot canno	ot grasp	the object within the specified test
• The sequence of ob	jects which are used in e	each run	is defined by the team.
v	id tray orange, EM-02= x type B, AX-02=bearin		x black, AX-01=bearing box type A, 03=axis, AX-09=motor
Run 1 Duration:	Timeout		
Object id:	, Orientation:	,	\square Success, \square Dropped, \square Missed
Run 2 Duration:	□ Timeout		
Object id:	, Orientation:	,	\square Success, \square Dropped, \square Missed
Comments:			
Run 3 Duration:	Timeout		
Object id:	, Orientation:	,	\square Success, \square Dropped, \square Missed
Comments:			
Run 4 Duration:	□ Timeout		
Object id:	, Orientation:	,	\Box Success, \Box Dropped, \Box Missed
Comments:			
Run 5 Duration:	□ Timeout		
Object id:	, Orientation:	,	\square Success, \square Dropped, \square Missed
Comments:			

Run 6 Duration:	\square Timeout	
Object id:	, Orientation:,	\Box Success, \Box Dropped, \Box Missed
Comments:		
Run 7 Duration:		
Object id:	, Orientation:,	\square Success, \square Dropped, \square Missed
Comments:		
Benchmarking data deliver	red appropriately: \square yes	s / \square no
Team leader signature:		
Referee signature:		

FBM 3: Control

Team name:	
Referee I:	, Referee II:
Date and time:	
Notes:	
• The duration for ea	ach run is based on the referee stop watch.
• Timeout is checked duration.	when the robot cannot execute the path within the specified test
• The specific path for	or this benchmark is defined before the competition.
Run 1 Duration:	\square Timeout, Finished complete path: \square Yes \square No
	, constant deviation:,
	□ Timeout, Finished complete path: □ Yes □ No, constant deviation:,
Comments:	
area deviation:	□ Timeout, Finished complete path: □ Yes □ No, constant deviation:,
area deviation:	□ Timeout, Finished complete path: □ Yes □ No, constant deviation:,
area deviation:	□ Timeout, Finished complete path: □ Yes □ No, constant deviation:,
_	elivered appropriately: yes / no e:
Referee signature:	