UNIVERSIDADE FEDERAL DE SANTA CATARINA
Computer Science

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Paper Tower Competition

Instructions

The goal is to build a paper tower of at least 60 cm height using only the materials provided. Your tower must be free of any outside support (e.g. cannot be fixed on the floor, wall, or a team member). The tower must be able to withstand a moderate breeze (as blown by the teacher).

Only projects completed on time with the tower fully built according to the requirements will be considered in determining the winner. Projects also need to have properly completed the performance report.

The criteria (with equal weights) to determine the winning team are:

- Largest number of SPIs and CPIs ≥ 1 in all stages
- Lowest total cost
- Beauty (to be evaluated subjectively by a vote of all students)

(Simplified) Project Plan

Observation. Only the phases 1 – 4 are considered within the Project plan (including technical activities and the monitoring & control activities).

Schedule

Phase	Planned result	Duration estimate
1. Design	Schematic design of the tower	6 min.
2. Construction	Tower with 20 cm height completed	6 min.
3. Construction	Tower with 40 cm height completed	6 min.
4. Construction and test	Tower with 60 cm height completed and tested	6 min.
Observation. The duration estimates include 3 min. technical activity and + 3 min. for monitoring & control for each phase.		

Human Resources

Role	Name
Project manager	
Principal engineer	
Engineer	
Engineer	
Engineer	
Auditor	

Risks

Potential Risk *[Mark with X]*	Risk	Prevention cost
	Lack of human resources	$ 25
	Lack of material	$ 25
	Requirement changes	$ 25
	Changes of deadline	$ 25
	Unexpected need of conformity to standards	$ 25
Total cost of risk prevention		

Cost baseline

Item	Unit value	PHASE 1. Design		PHASE 2. Construction		PHASE 3. Construction		PHASE 4. Construction & test	
		Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost	Quantity	Total Cost
Human Resources *[no. team member * 6 min * $ 10]*	$ 10/1 min.								
Paper sheet	$ 2								
Paper clip	$ 1								
Piece (5 cm) of tape	$ 5								
Scissor	$ 20								
Tape measure	$ 20								
Risk prevention	$ 25			--	--	--	--	--	--
TOTAL per Phase									
TOTAL of the Project									

Documentation of the tower design

[*Document the design of the tower through a schematic drawing]*

Register of Used Resources

PHASE 1. Design

Item	Quantity	Unit value	Total value
Human resources		$ 10/1 min.	
Paper sheet		$ 2	
Paper clip		$ 1	
Piece (5 cm) of tape		$ 5	
Scissor		$ 20	
Tape measure		$ 20	
Risk prevention		$ 25	
TOTAL			

PHASE 2. Construction

Item	Quantity	Unit value	Total value
Human resources		$ 10/1 min.	
Paper sheet		$ 2	
Paper clip		$ 1	
Piece (5 cm) of tape		$ 5	
Scissor		$ 20	
Tape measure		$ 20	
TOTAL			

PHASE 3. Construction

Item	Quantity	Unit value	Total value
Human resources		$ 10/1 min.	
Paper sheet		$ 2	
Paper clip		$ 1	
Piece (5 cm) of tape		$ 5	
Scissor		$ 20	
Tape measure		$ 20	
TOTAL			

PHASE 4. Construction and Test

Item	Quantity	Unit value	Total value
Human resources		$ 10/1 min.	
Paper sheet		$ 2	
Paper clip		$ 1	
Piece (5 cm) of tape		$ 5	
Scissor		$ 20	
Tape measure		$ 20	
TOTAL			

Performance Report

	Progress		Cost		Earned Value Management		
	Planned	**Actual**	**Planned**	**Actual**	**EV**	**SPI**	**CPI**
Example PHASE 1. Design	*100% of design completed*	*80% completed*	*$ 180.00*	*$ 180.00*	*$ 144.00*	*0.8*	*0.8*
PHASE 1. Design	100% of design completed						
PHASE 2. Construction	Tower with 20 cm height completed						
Cumulative of PHASE 2			EV =	AC =			
PHASE 3. Construction	Tower with 40 cm height completed						
Cumulative of PHASE 3			EV =	AC =			
PHASE 4. Construction & test	Tower with 60 cm height completed and tested						
Cumulative of PHASE 4			EV =	AC =			

Earned value management:

- PV – Planned value: Cost planned for the scheduled activities to be completed until the current date.
- AC – Actual Cost: Cost spent on the performed activities until the current date.
- EV – Earned Value: Planned cost of performed work.

- SPI – Schedule Performance Index: SPI = EV/PV
- CPI – Cost Performance Index*:* CPI = EV/AC