

ACWUA

Arab Countries Water Utilities Association

A GLOBAL CENTER OF EXCELLENCE FOR WATER AND WASTEWATER MANAGEMENT AND KNOWHO

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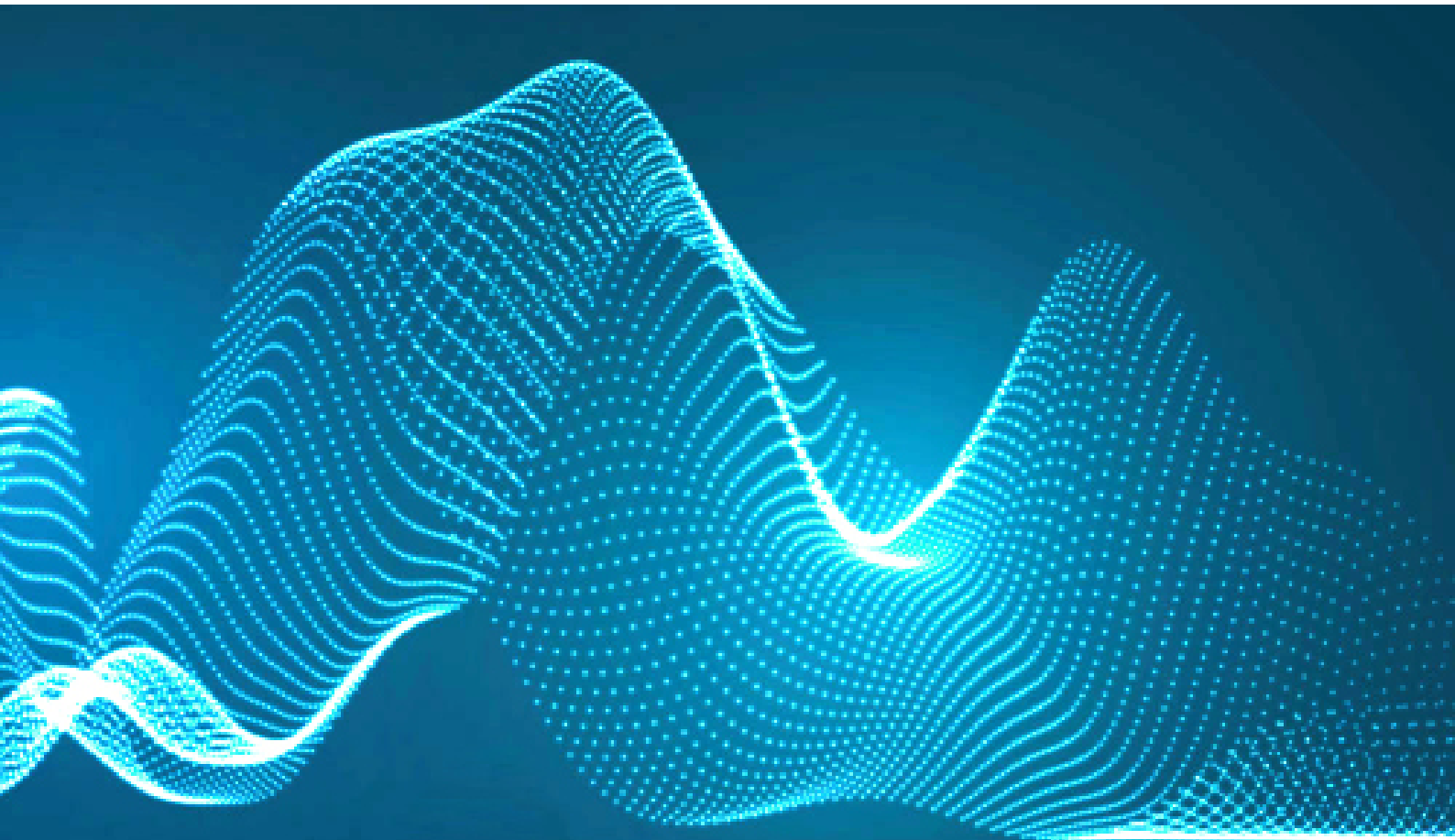


ACWUA Modified Certified Training Programs



WATER SYSTEMS CERTIFICATION PROGRAMS

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| 1. | Water Treatment. <i>(4 Levels)</i> |
| 2. | Water Distribution. <i>(4 Levels)</i> |
| 3. | Water Quality & Laboratories Management. <i>(3 Levels)</i> |
| 4. | Water Safety Plan(WSP). <i>(3 Levels)</i> |
| 5. | Non-Revenue Water. <i>(4 Levels)</i> |



Water Treatment Certification Program

No.	Training unit titles	Skilled Operators Maintenance staff and helpers (Hours)	Craftsmen Senior Operators Maintenance staff (Hours)	Technicians Engineers assistants (Hours)	Professionals Engineers level (Hours)
		Level 1	Level 2	Level 3	Level 4
1	Water treatment operator framework	4	2	1	0
2	Reservoir management and intake structure of potable water in water treatment plants	4	5	5	3
3	Coagulation & flocculation of potable water in water treatment plants	4	5	5	3
4	Sedimentation potable water in water treatment plants	4	5	5	4
5	Filtration potable water in water treatment plants	4	5	5	4
6	Disinfection of Water in Water Treatment Plant	6	5	3	1
7	Handling and disposal of process wastes	1	2	5	3
8	Membrane filtration and demineralization	3	5	5	3
9	Iron & manganese control	2	5	4	2
10	Taste & Odor control	3	5	5	3
11	Corrosion control	2	5	5	3
12	Softening of water	3	5	4	1
13	Fluoridation in water treatment	0	1	2	3
14	Safety in water treatment	6	3	3	3
15	Laboratory Procedures	6	8	6	3
16	Maintenance in Water Treatment Plant	3	6	6	3
17	Administration of water treatment plant	0	3	6	8
Total		55	75	75	50

Water Distribution Certification Program

No.	Training unit titles	Skilled Operators Maintenance staff and helpers (Hours)	Craftsmen Senior Operators Maintenance staff (Hours)	Technicians Engineers assistants (Hours)	Professionals Engineers level (Hours)
		Level 1	Level 2	Level 3	Level 4
1	Framework of water distribution system operator	5	2	1	0
2	Storage Facilities	4	6	3	2
3	Pumping stations	4	6	6	4
4	Pipelines facilities	4	6	6	3
5	Valves/Meters	3	4	6	3
6	Customer services	10	10	6	6
7	Water Quality	10	6	6	4
8	Safety	6	6	10	8
9	Administration	4	4	6	10
Total		50	50	50	40

Water Quality & Laboratories Management Certification Program

No.	Training unit titles	Skilled Operators Senior Craftsmen Maintenance staff and helpers (Hours)	Technicians Engineers assistants (Hours)	Professional engineer manager, and directors level (Hours)
		Level 1	Level 2	Level 3
1	Sampling procedures for drinking water	10	10	0
2	Detection & Enumeration of Total Coliform & Escherichia coli (E.coli)	10	10	5
3	Chemical analysis (Inorganic) including: Anions & cations, ammonium	8	8	5
4	Chemical analysis (Inorganic1) including: Phosphate, Boron, Silicate	8	8	5
5	Chemical analysis (Inorganic2) including: Fluoride, Cyanide, Alkalinity, EC	8	8	5
6	Chemical analysis (Inorganic) including: Heavy metals	8	8	5
7	Chemical analysis (Organic)/ including: TOC, THMs, Chlorinated pesticides	8	8	5
8	Analytical quality assurance quality control	4	4	10
9	Quality management system establishment	4	4	10
10	Laboratory safety	7	7	0
Total		75	75	50

Isotopes and Radiation

No.	Training unit titles	Professional engineer manager, and directors level (Hours)
		Level 4
1	Radiological Analysis	30

Water Safety Plan (WSP) Certification Program

No.	Training unit titles	Skilled Operators Senior Craftsmen Maintenance staff and helpers (Hours)	Technicians Engineers assistants (Hours)	Professional engineer manager, and directors level (Hours)
		Level 1	Level 2	Level 3
1	Preparing for WSP	4	4	4
2	Hazard Identification & Risk prioritization	5	5	6
3	Documenting, reporting and record keeping of WSP components	4	4	4
4	Developing Supporting program	0	4	4
5	Establishing Management procedures for WSP	0	4	4
6	Implementing of Validating and verifying WSP	0	4	4
7	Monitoring Control Measures in the drinking water supply system	8	6	5
8	Determining and validating Control Measures, reassess and prioritize the Risks of drinking water supply system	4	6	6
9	WSP of drinking water supply system,	0	4	4
10	Describing Water Supply	5	5	5
11	Developing, implementing and maintaining an improvement / upgrade plan	0	4	4
Total		30	50	50

Non-Revenue Water (NRW) Certification Program

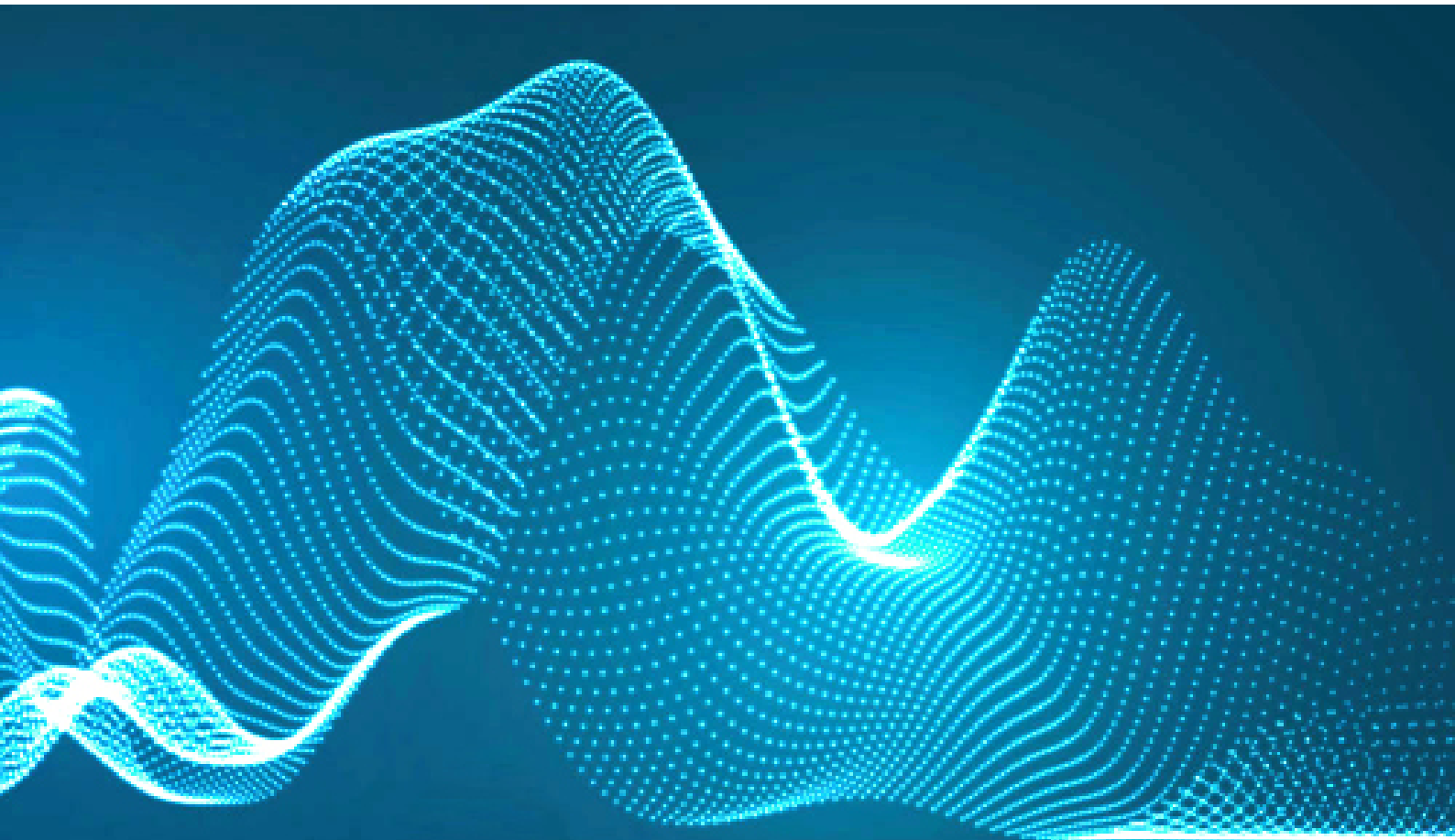
No.	Training unit titles	Skilled Operators Maintenance staff and helpers (Hours)	Craftsmen Senior Operators Maintenance staff (Hours)	Technicians Engineers assistants (Hours)	Professionals Engineers level (Hours)
		Level 1	Level 2	Level 3	Level 4
1	Reducing Physical losses	10	10	10	10
2	Reducing Commercial losses	10	10	10	10
3	Optimizing Networks Using District Metered Areas (DMAs) and Pressure Management	0	0	10	10
4	Optimizing Customer Management Systems and Processes	5	5	10	10
5	Integrating GIS in Water utility business	0	0	10	10
Total		25	25	50	50

Developing NRW strategies

No.	Training unit titles	Professional engineer manager, and directors level
		Level 5
1	Auditing Water Losses: Diagnostic tool	15
2	Developing NRW strategies towards cost recovery	10
Total		30

Waste Water Systems Certification Programs

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|----|---|
| 1. | Wastewater Collection systems. (3 Levels) |
| 2. | Wastewater Treatment. (4 Levels) |
| 3. | Industrial Waste Water Management (IWWM). (4 Levels) |
| 4. | Wastewater Quality & Laboratories Management. (3 Levels) |



Wastewater Systems Outlines

Wastewater Collection systems

No.	Training unit titles	Skilled Operators Senior Craftsmen Maintenance staff and helpers (Hours)	Technicians Engineers assistants (Hours)	Professional engineer manager, and directors level (Hours)
		Level 1	Level 2	Level 3
1	Wastewater collection system Operator framework	2	0	0
2	Components of wastewater collection system	3	3	2
3	Basics of Gravity Sewer Design	2	6	8
4	Sewer Construction	10	6	0
5	Wastewater collection System Failures and maintenance	10	6	2
6	Wastewater collection Inspection	5	6	5
7	Wastewater Collection System Rehabilitation	4	4	8
8	Lifting station	6	6	5
9	Odor control	2	5	2
10	A Organization for system operation and maintenance	2	5	6
11	Safety and Health Program	4	3	2
Total		50	50	40

Wastewater Treatment

No.	Training unit titles	Skilled Operators Maintenance staff and helpers (Hours)	Craftsmen Senior Operators Maintenance staff (Hours)	Technicians Engineers assistants (Hours)	Professionals Engineers level (Hours)
		Level 1	Level 2	Level 3	Level 4
1	Waste water treatment operator framework Treatment	2	0	0	0
2	Preliminary Wastewater Treatment	4	4	0	0
3	Primary Sedimentation	3	3	1	0
4	Activated Sludge	8	8	6	6
5	Wastewater stabilization ponds	3	2	0	0
6	Sequencing Batch Reactor (SBR)	0	4	6	3
7	Trickling Filters	4	2	0	0
8	Wastewater Rotating Biological Contactor (RBC)	0	4	4	0
9	Wastewater Membrane bio reactor (MBR)	0	2	2	6
10	Nitrogen & Phosphorus Removal	0	2	3	4
11	Solids Removal from Secondary Effluent	2	2	2	2
12	Disinfection of Secondary Effluent	3	2	2	2
13	Residual Solids Management	3	2	6	6
14	Odor Control	2	2	4	4
15	Wastewater reclaimed and reuse	2	2	1	1
16	Maintenance	4	5	6	6
17	Laboratory procedures	3	3	3	4
18	Safety and Health Program	6	4	2	2
19	Wastewater Treatment Plant	1	2	2	4
Total		50	55	50	50

Industrial Waste Water Management (IWWM)

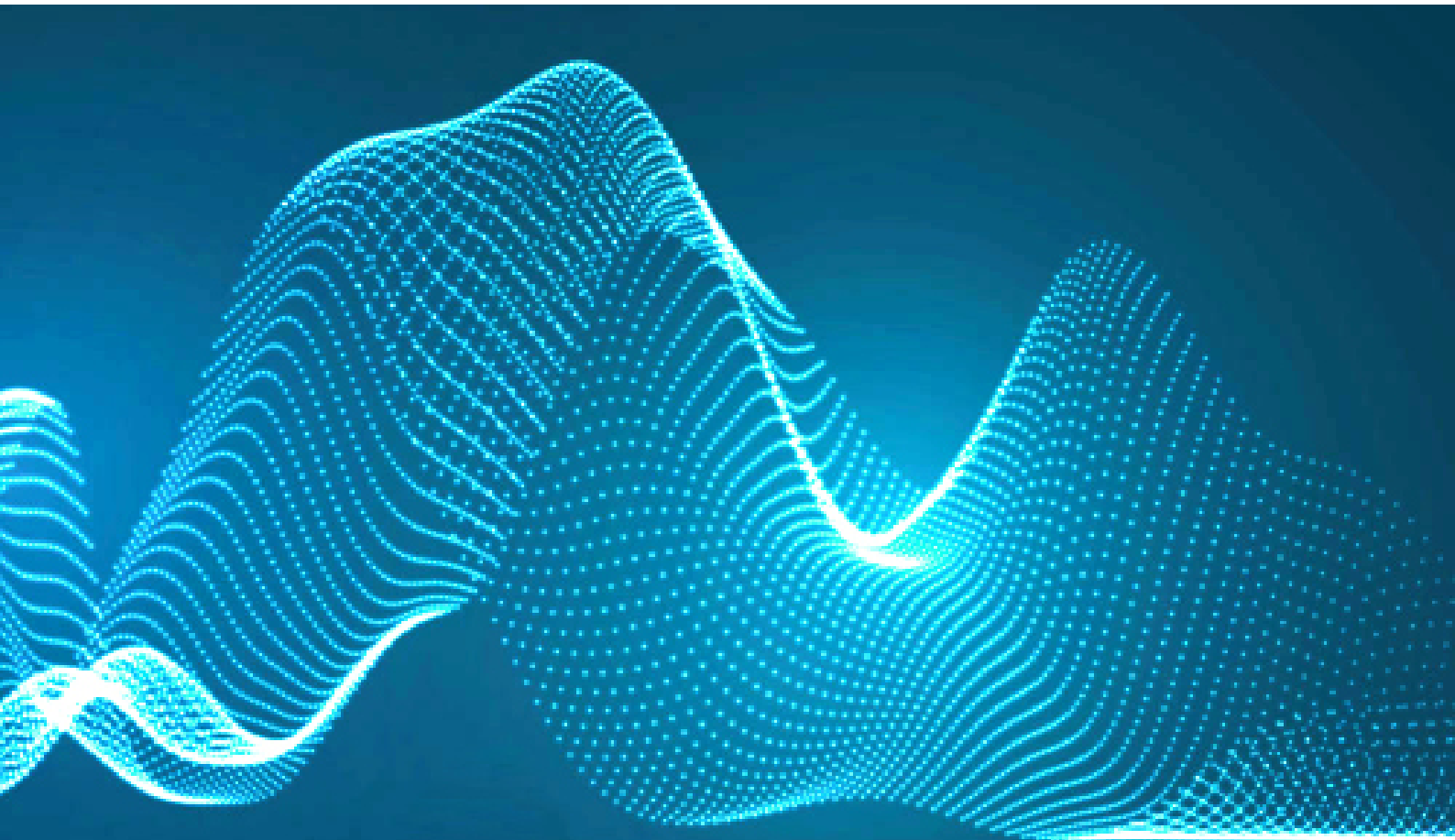
No.	Training unit titles	Skilled Operators Maintenance staff and helpers (Hours)	Craftsmen Senior Operators Maintenance staff (Hours)	Technicians Engineers assistants (Hours)	Professionals Engineers level (Hours)
		Level 1	Level 2	Level 3	Level 4
1	The scope of Industrial Wastewater Management and role of pretreatment facility inspector	0	0	10	10
2	Managing pretreatment program	0	0	10	10
3	Development and application of regulation	5	5	5	5
4	Inspection of Industrial Waste Water typical industry	0	0	10	10
5	Apply safety measures in pretreatment inspection and sampling work	10	10	5	5
6	Sampling procedures for waste water	15	15	5	5
7	Industrial wastewater sources	0	0	5	5
8	Industrial inspection procedures	0	0	10	10
Total		30	30	60	60

Wastewater Quality & Laboratories Management

No.	Training unit titles	Skilled Operators Senior Craftsmen Maintenance staff and helpers (Hours)	Technicians Engineers assistants (Hours)	Professional engineer manager, and directors level (Hours)
		Level 1	Level 2	Level 3
1	Sampling procedures for wastewater	10	10	3
2	Detection & Enumeration of Total Coli-form & Escherichia coli (E.coli)	8	8	3
3	Chemical analysis/wastewater/ Inorganic including Heavy metals	10	10	4
4	Analysis Procedure for Anions and Cations by using Ion Chromatography System	10	10	5
5	Chemical analysis/wastewater/ Organic including: Biological Oxygen Demand (BOD)	8	8	3
6	Chemical analysis/wastewater: Chemical Oxygen Demand (COD)	8	8	3
7	Chemical analysis/wastewater:-Solids: TS, TSS, TDS	8	8	3
8	Analytical quality assurance quality control	4	4	10
9	Quality management system establishment	4	4	10
10	Laboratory safety	5	5	6
Total		75	75	50

Waste Water Systems Non-Certification Programs

1. Sanitation Safety Plan.
2. Decentralized WWTP.



Sanitation Safety Plan (Governance & Reuse)

No.	Training unit titles	Highly quailed Technicians, Engineer manager, and directors level in wastewater systems (Hours)
		Level 1
1	Introduction to reuse/sanitation safety planning and governance system	7
2	Prepare for reuse/sanitation safety plan	4
3	Describe the existing sanitation system	5
4	Identify hazardous events, assess existing control measures and exposure risks	4
5	Develop an incremental improvement plan	5
Total		25

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Water Governance Managerial Tools
Training Programs

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