



# dynamic web ui

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ui = data + style + behaviour

web ui = html + css + javascript

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why we need javascript programs with HTML-page(s) in browser environment?



using browser provided 'APIs',  
.js programs can bring any dynamic-ui activity to web-page



browser apis are based on w3c standards

**DOM, XHR/Fetch, Timer** apis are implemented by browser vendors (chrome, firefox, IE/Edge..) natively, and abstracted as '**javascript**' objects & functions

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## DOM api

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- create, retrieve, update, delete HTML elements
- can change HTML-element's style ( css )

- can change HTML-element's inner content
  - can change HTML-element's attributes/properties
  - can validate all form-fields before submit to server-side-programs
  - can create rich/user-friendly UI components to HTML-page like calendar, autocomplete,..
  - can listen events ( mouse, keyboard events) on HTML elements
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### **Timer api**

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- can execute some actions on timeout or time-interval
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### **XHR or fetch apis**

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- can communicate with server-side programs async
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