Empowering Women through Knowledge and Skills on Coding for Employment Opportunities Information Technology Sector

ENCODE-IT

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AI Coding Tools and Usage

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3.1. What are AI Coding Tools?

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AI Coding Tools and Usage

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Artificial intelligence (AI) coding tools are digital systems that support users in the software development process. These tools analyse commands given in natural language and convert them into code that computers can understand. Traditional coding methods required users to learn specific programming languages and write all the steps manually. AI-based tools simplify this process, allowing users to explain what they want to do in simple terms. The system interprets the request, generates the necessary code, and often makes the process understandable by explaining it step by step.

The main purpose of these tools is to make software production accessible to people without technical knowledge. AI coding tools reduce the time and effort required to develop projects such as websites, mobile applications, or digital automation. Using machine learning and natural language processing technologies, they predict user needs, detect errors, and suggest appropriate solutions. This allows users to focus on developing their ideas and thinking results-oriented rather than dealing with technical details.

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3.1. What are AI Coding Tools?

AI coding tools are built on large language models. These models are trained on vast amounts of text and code data. When a user issues a command, the system scans past similar examples, predicts the most suitable structure, and generates code or a solution accordingly. This predictive structure makes the tools flexible; they can offer different approaches to the same request, correct errors, and make the suggested code more efficient. This makes both the learning and application processes interactive for the user.

AI coding tools fall into three main categories:
Full Code with AI, Low-code ve No-code.

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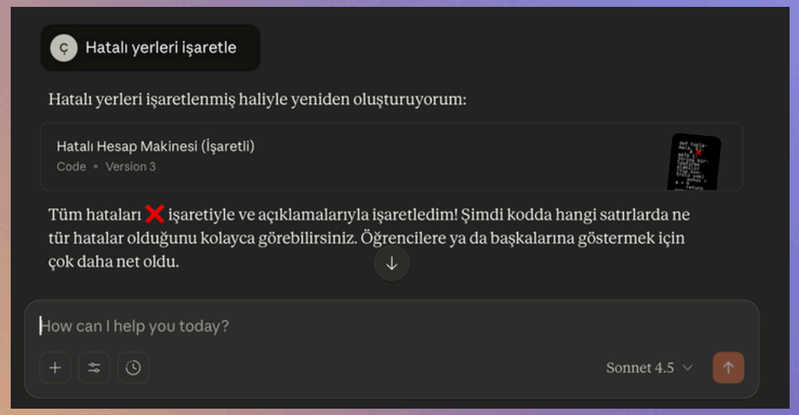
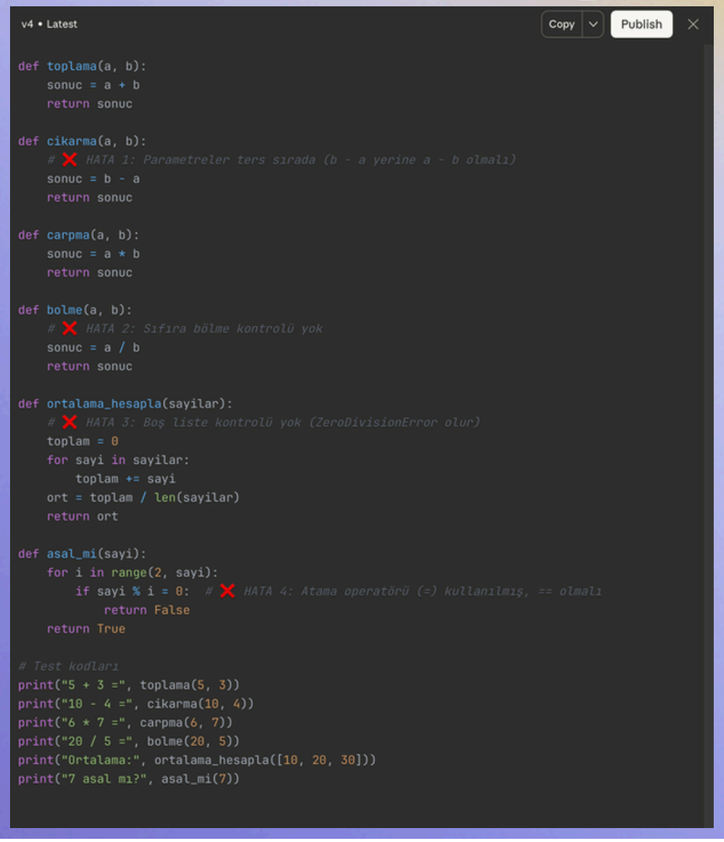
3.1.1.Full Code with AI:

These are tools that support a completely code-based development process. In these tools, the user writes the code directly, but artificial intelligence actively intervenes to speed up the process, reduce errors, and offer suggestions. For example, platforms such as ChatGPT, GitHub Copilot, or Claude analyse the code written by the user, complete any missing parts, and generate alternative solutions. This approach is a method that increases productivity for users with basic programming knowledge.

***Claude**





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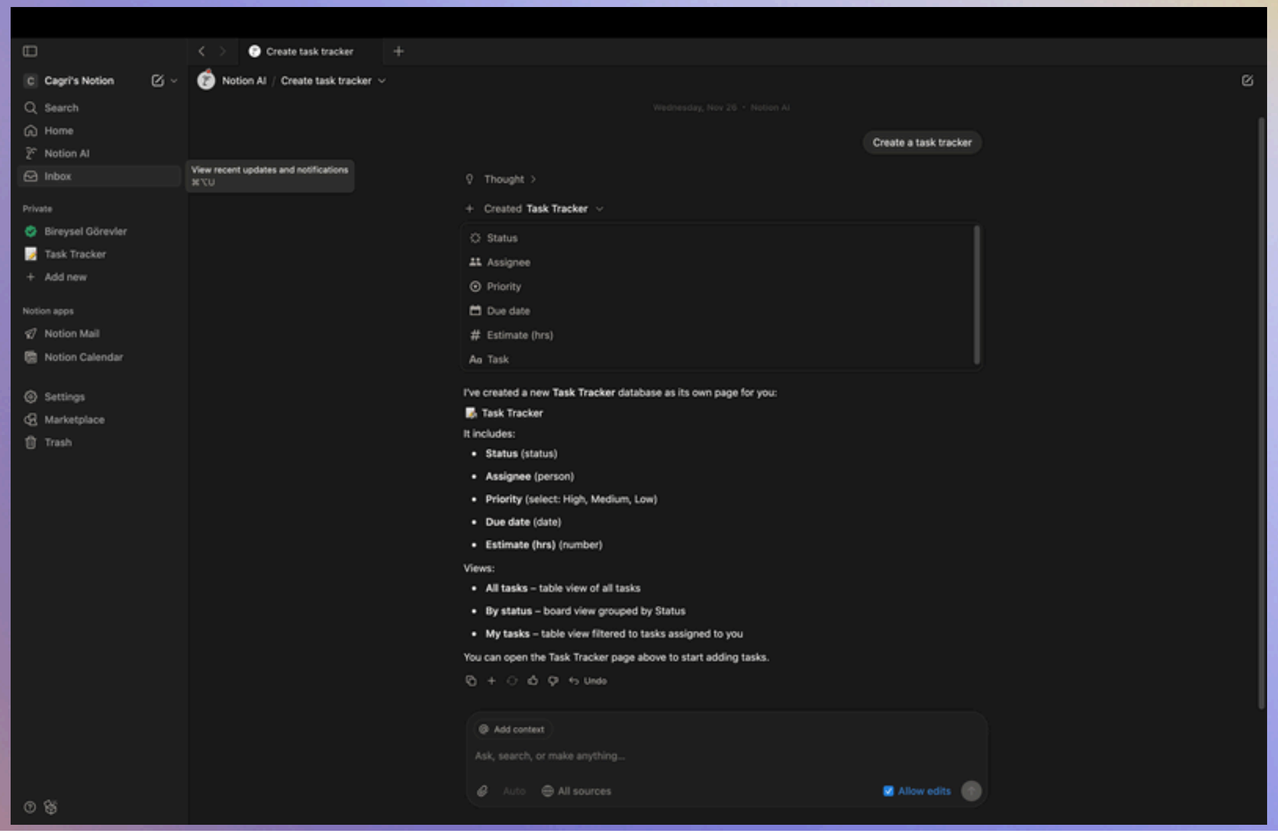
3.1.2. Low-code:

Enables application or system development using minimal coding knowledge. Drag-and-drop logic, ready-made components, and simple commands work together on these platforms. Users can perform some tasks through a visual interface and customise the project by adding small pieces of code when necessary. Tools such as Glide, AppGyver, or Notion AI are examples of this group. Low-code tools are ideal for individuals with technical infrastructure who want to speed up the process.



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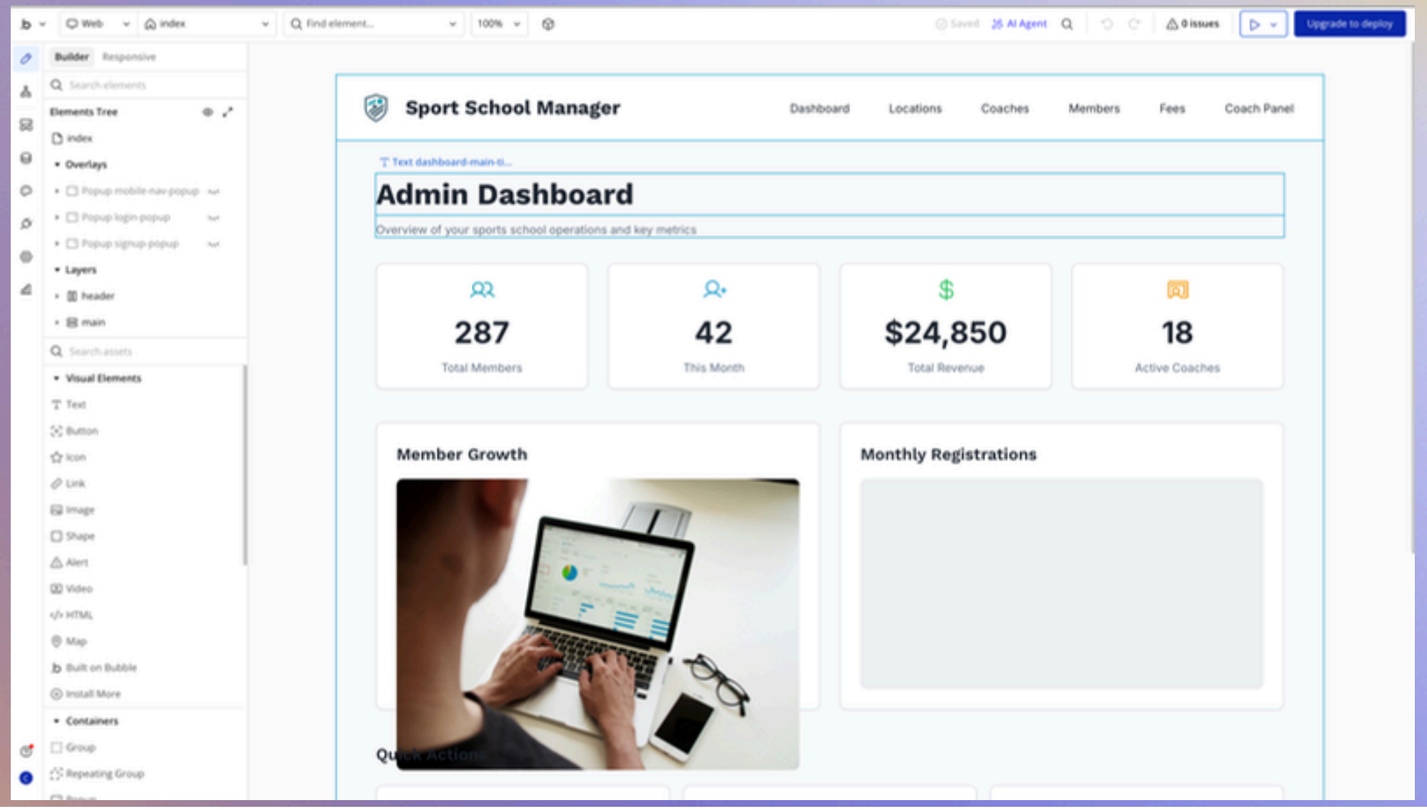
3.1.3. No-code:

These are entirely visual-based. In these systems, users can create digital products without writing any code, simply by selecting and arranging components on the interface. Websites, forms, automations, or simple mobile applications can be easily created using this method. Platforms such as Bubble, Zapier, or Canva enable users without technical knowledge to produce content.

***Bubble**



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3.1. What are AI Coding Tools?

Together, these three categories form a comprehensive structure that enables everyone to produce at different levels of technology. Full Code with AI offers technical depth and learning opportunities; Low-code provides speed and flexibility, while No-code maximises accessibility. In addition, AI-powered testing and debugging tools are also an important part of the software development process. These tools analyse the written code, find errors, and offer suggestions for improvement. This increases the reliability and efficiency of the developed projects.

The advantages offered by AI coding tools include speed, error-free operation, ease of learning, and increased productivity. These systems offer a safe testing ground for beginners while enabling experienced users to use their time more efficiently. However, it should be remembered that these tools are not fully automated systems. It is always the user's responsibility to evaluate the accuracy of the results produced, pay attention to security and privacy rules, and use them within ethical boundaries. In conclusion, AI coding tools represent a new era in digital production. They make technology more inclusive, flexible, and educational. By removing coding barriers, they enable more people to engage in digital production and facilitate the rapid transformation of ideas into tangible applications.

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3.2. Areas of Application for AI Coding Tools

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3.2. Areas of Application for AI Coding Tools

Artificial intelligence-powered coding tools are now used not only by software developers but also by individuals and organisations operating in a wide range of fields. The fundamental feature of these tools is that they simplify complex technical processes, enabling ideas to be brought to life more quickly and easily. They have a broad range of applications, from education to entrepreneurship, data analysis to design.

The main areas where AI coding tools are widely used are as follows:

1. Software and Application Development
2. Business Processes and Automation
3. Education and Learning Technologies
4. Data Analysis and Reporting
5. Design and Prototyping
6. Content Creation and Digital Marketing
7. Research and Development (R&D)
8. Public and Social Benefit Projects
9. Personal Productivity and Daily Life

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AI Coding Tools and Usage

3.2.1. Software and Application Development

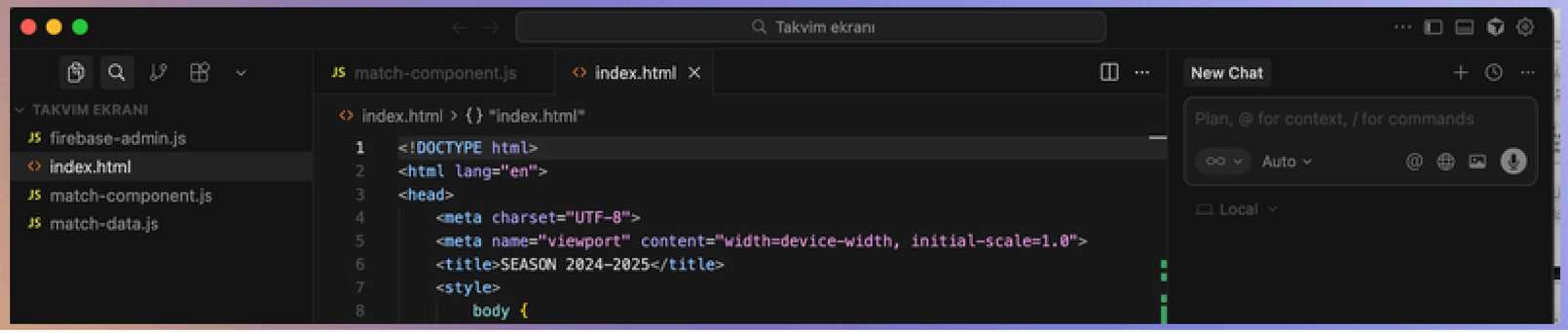
AI tools are used to develop websites, mobile applications, and desktop software. Users can create the basic structure of systems, shape interface designs, and automatically generate the necessary code simply by explaining their ideas.

• Full Code with AI tools increase developers' productivity and reduce error rates in complex code structures.

• Low-code and No-code platforms enable individuals with limited technical knowledge to create their own websites, online stores, or databases.

This allows small businesses, entrepreneurs, and non-profit organisations to produce their own digital solutions without incurring high-cost software processes.

***Cursor**



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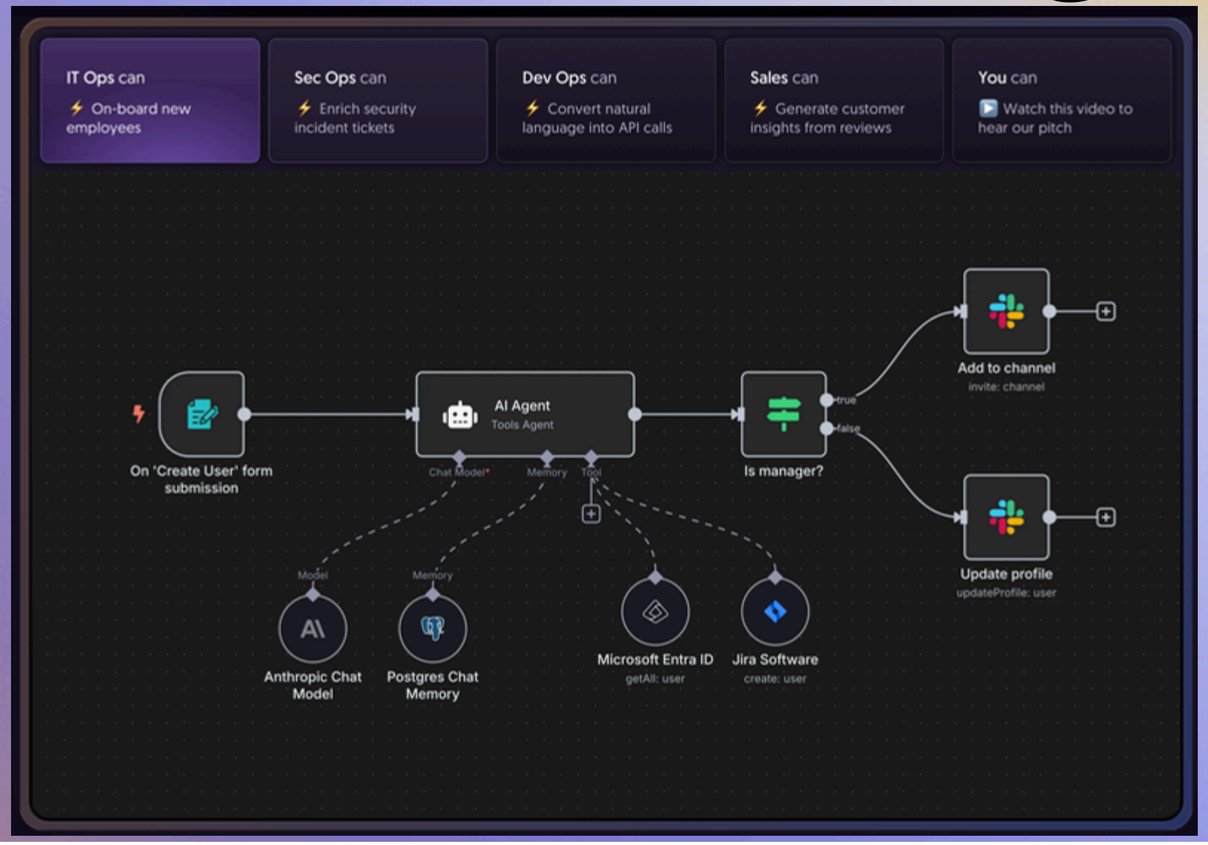
3.2.2. Business Processes and Automation

AI coding tools play a significant role in automating repetitive tasks. Processes such as sending emails, collecting data, editing documents, registering customers, or planning social media no longer need to be done manually. Tools like Zapier, n8n, or Make allow users to create workflows that operate on a ‘when this happens, do that’ logic. For example, an email can be sent automatically when a sales form is filled out, and the same data can be recorded in a table and converted into a report. Such automation saves time and increases efficiency, particularly in SMEs, educational institutions, and non-governmental organisations.

***n8n**



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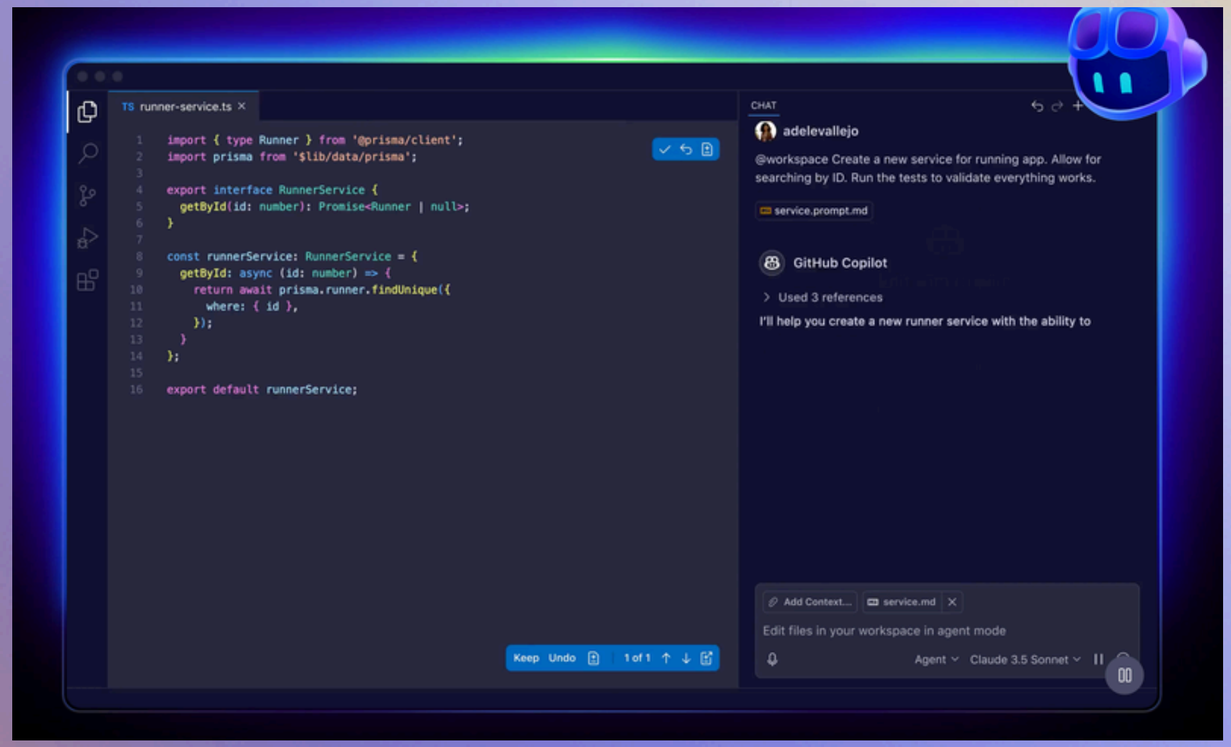
3.2.3. Education and Learning Technologies

AI coding tools have become powerful educational tools that facilitate learning processes. Systems such as Github Copilot or Replit allow users to receive instant feedback while writing code and understand their mistakes.

In addition, teachers and trainers can use these tools to provide students with hands-on learning environments. Students can now experience not only theory but also practical production in coding, algorithmic logic, or problem-solving.

At the same time, no-code platforms also enable teachers to develop their own educational applications or student tracking systems.

***GitHub Copilot**



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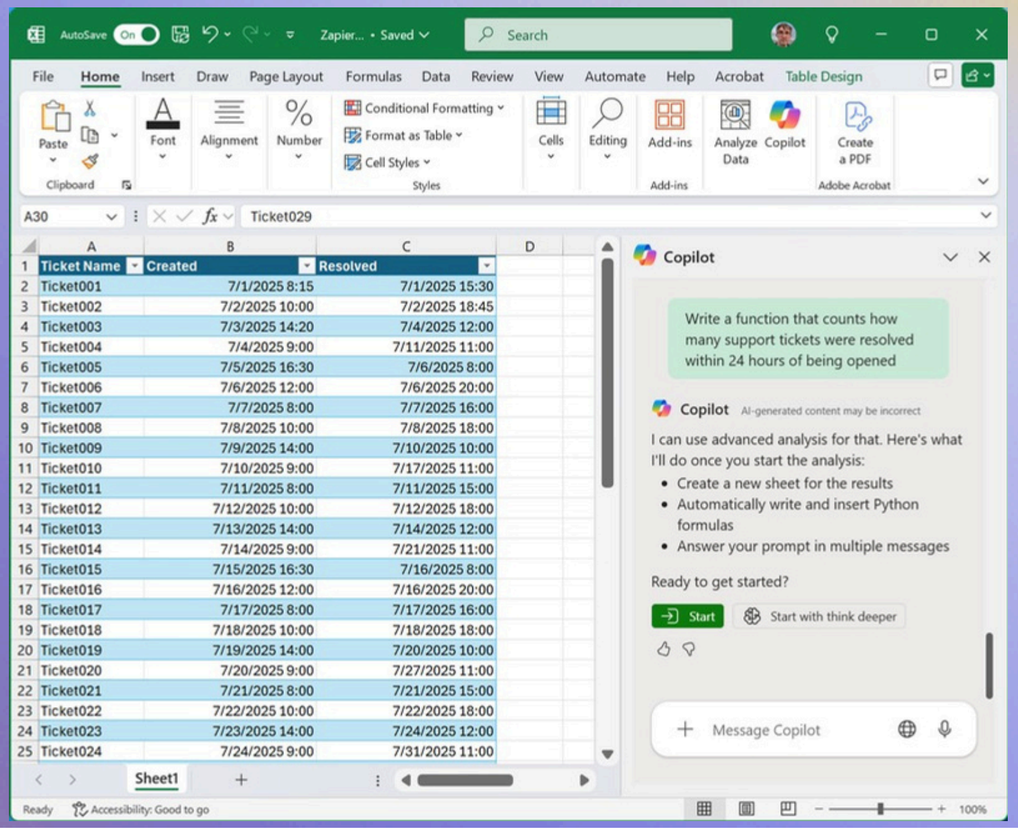
3.2.4. Data Analysis and Reporting

Users can create automatic graphs or summary reports simply by writing commands such as ‘Show monthly sales trends from this data.’ Python-supported tools or Microsoft Excel Copilot data analysis modules make these processes possible without requiring technical knowledge.

This area of application is particularly widespread in finance, marketing, education, and the public sector.



***Microsoft Excel Copilot**

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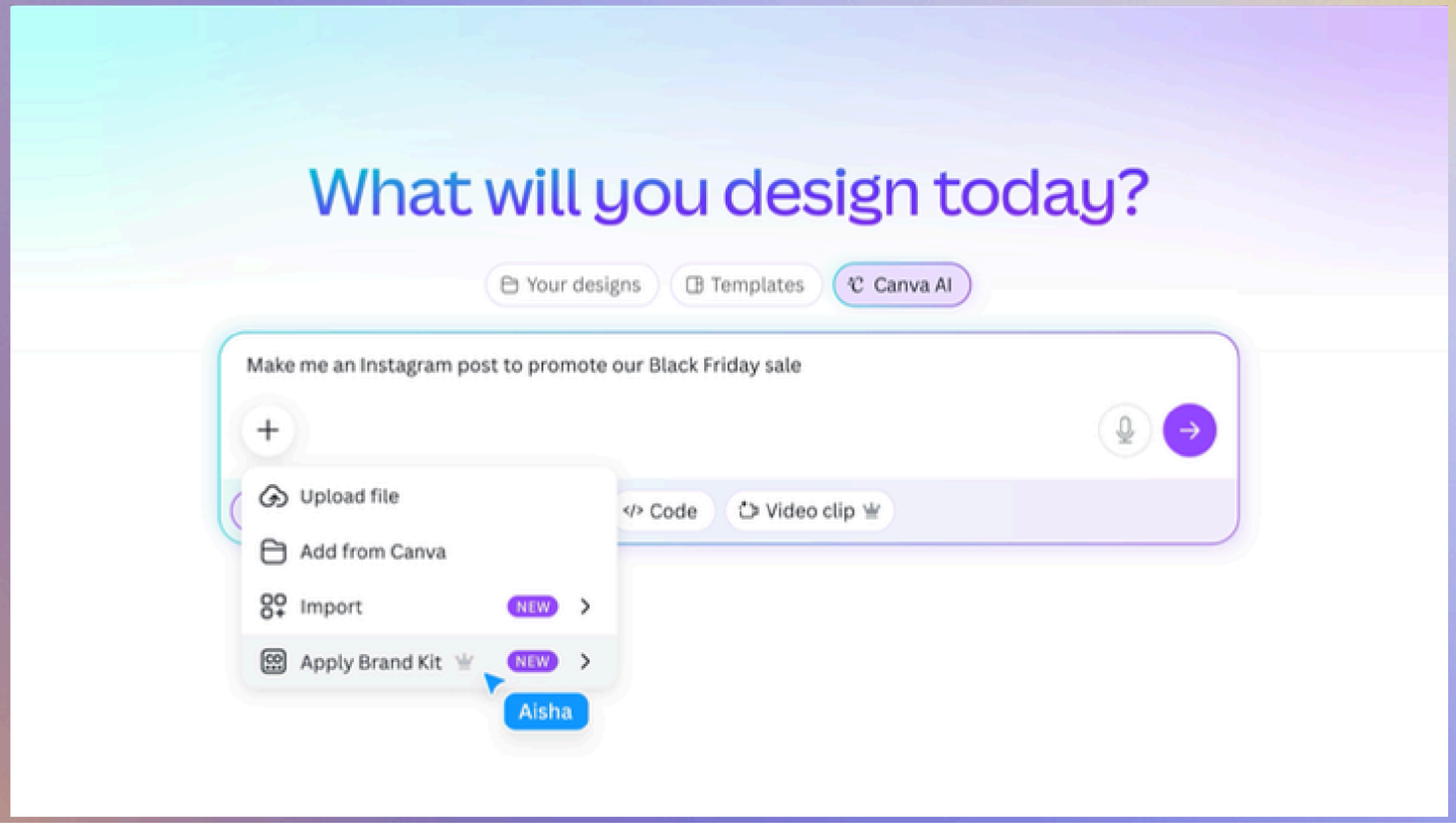
3.2.5. Design and Prototyping

The design process is an important stage in bringing an idea to life. AI-powered tools help users quickly create visual drafts, interfaces, and prototypes.
Tools such as Canva, Figma, Adobe Firefly, or Uizard can generate visual interfaces from written commands. This allows the screens of an application or the layout of a website to be created in minutes.
Developers can test these prototypes to gather feedback and move on to the development stage without wasting time.

***Canva AI**



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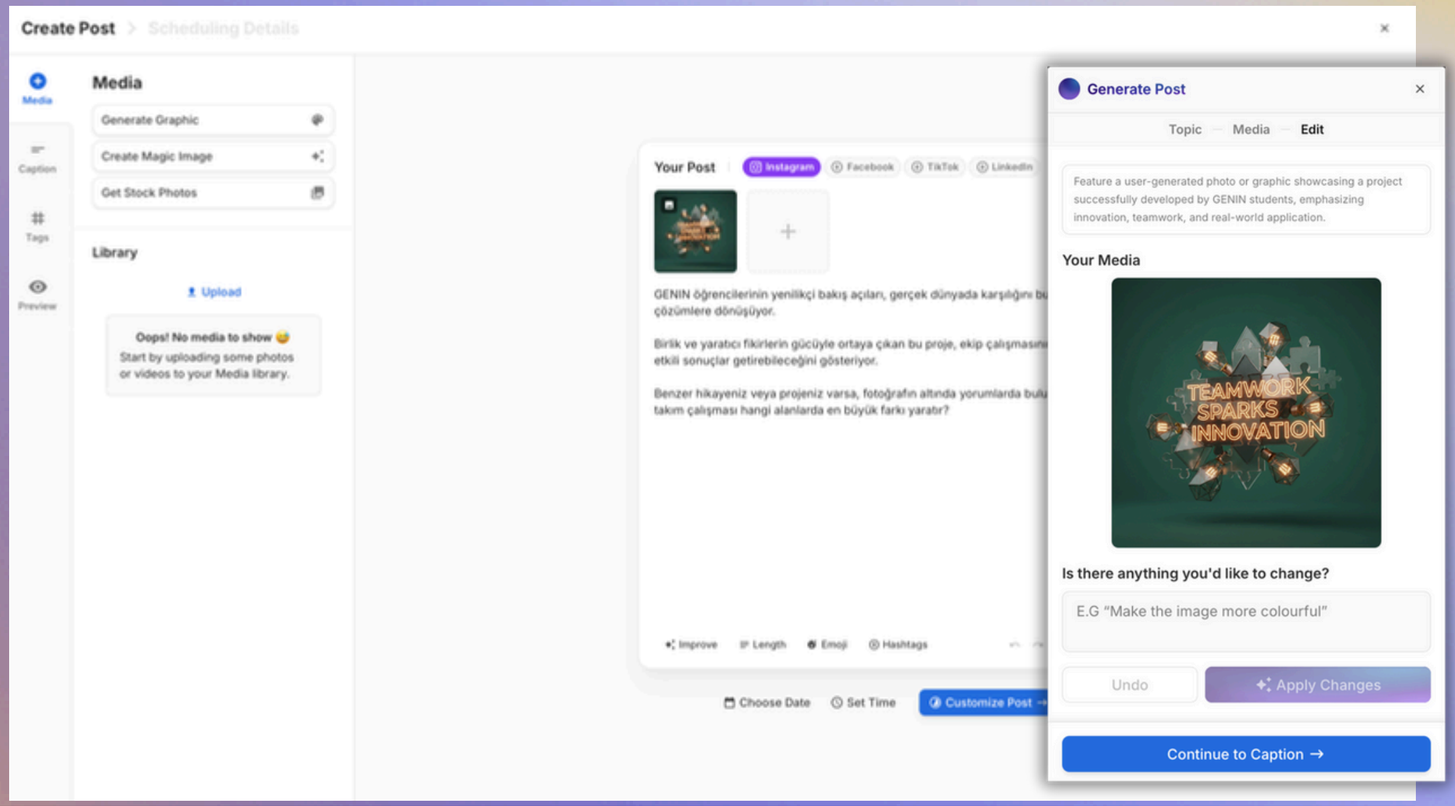
3.2.6. Content Creation and Digital Marketing

AI coding tools are used not only in technical software processes but also in content creation and digital marketing.
It is now much easier to generate text, visuals or email automations for websites, e-commerce platforms or blogs. Users without coding skills can create their own promotional pages, plan social media posts or analyse visitor data with AI-powered systems.
These tools have become an important support element, especially for small businesses undergoing digital transformation.

***Flick.social**



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3.2.7. Research and Development (R&D)

Researchers, scientists, and engineers also use AI coding tools extensively.
AI provides significant convenience in areas such as analysing large data sets, automating experimental simulations, or prototyping new models.

For example, researchers can automatically generate statistical analysis codes from an AI-supported model or digitise laboratory processes. This saves time and reduces errors, particularly in academic work.

***Cursor**

***Excel Copilot**

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3.2.8. Public and Social Benefit Projects

Local authorities, associations and civil society organisations use AI tools to develop digital services for citizens. Applications such as application forms, data tracking systems, online maps or social assistance automation can be easily designed using no-code and low-code tools. This enables even organisations with limited technical staff to produce digital services.

3.2.9. Personal Productivity and Daily Life

AI coding tools are also productivity tools for individual users. Personal budget tracking, to-do lists, reminder applications, or simple web portals can be easily created with these tools.
Users are now not only consumers but also producers. Thanks to AI-supported systems, everyone can develop their own digital solutions.

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AI Coding Tools and Usage

Abstract

AI coding tools are versatile systems that can be used in almost any sector. They enable people to actively participate in digital transformation in education, business, public services, research, and individual production.

These tools not only simplify technology but also become one of the cornerstones of the digital age by supporting creativity and equal opportunities.

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3.3. Benefits Provided by AI Coding Tools

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3.3. Benefits Provided by AI Coding Tools

Artificial intelligence-powered coding tools make the digital production process more accessible, efficient, and educational. These tools not only simplify software development; they support learning, save time, and create equal opportunities for users with varying levels of experience. The key benefits of these tools are outlined below.

Accessibility and Equal Opportunity
Time and Cost Savings
Ease of Learning and Knowledge Acquisition
Increased Productivity and Creativity
Reduced Errors and Increased Quality
Collaboration and Ease of Sharing
Social and Economic Contribution

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Accessibility and Equal Opportunity

AI coding tools remove barriers to accessing technology. Even users without coding knowledge can develop their own applications, websites, or automation systems thanks to drag-and-drop-based platforms. This creates opportunities for disadvantaged groups, women, and young people to access digital skills. The democratisation of technology enables a wider segment of society to become producers.

Time and Cost Savings

Traditional software development processes are both lengthy and costly. AI tools significantly shorten project timelines by accelerating the stages of code writing, testing, and debugging. Thanks to automatic suggestions and ready-made templates, users can complete repetitive tasks in a short time. Small businesses, start-ups and non-governmental organisations can thus produce digital solutions at low cost.

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Ease of Learning and Knowledge Acquisition

Artificial intelligence tools are not only production tools but also learning tools. Users instantly see the results of every action they take, identify their mistakes, and learn by receiving explanations from the system. Tools such as ChatGPT, Replit, or GitHub Copilot provide instructive feedback by analysing and explaining the written code. This allows users not only to obtain results but also to understand and learn the process.

Increased Productivity and Creativity

AI tools enable users to quickly test and develop their ideas. It becomes possible to focus on the creative process and design without wasting time on technical details. Artificial intelligence takes on repetitive tasks, giving users time for strategic thinking and problem solving. This encourages innovative production at both the individual and organisational levels.

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Reduced Errors and Increased Quality

AI-powered systems analyse written code to detect potential errors early and offer suggestions for correction. This reduces the error rate in projects and increases the reliability of results. This is particularly important as a learning aid for new users in coding. High-quality outputs increase user motivation and provide a secure production environment.

Collaboration and Ease of Sharing

Many AI-based platforms allow users to collaborate on the same project. The ability to share code, design, or application drafts facilitates teamwork. This creates a strong culture of sharing, particularly in educational and community projects. People learn from each other, information sharing accelerates, and a culture of collective production develops.

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Social and Economic Contribution

One of the most significant impacts of AI coding tools is their social benefit. The spread of digital skills enables individuals to become more economically active. Women, young people, and disadvantaged groups can participate in freelance projects, remote work, and digital ventures thanks to these tools. This strengthens both individual income growth and social participation.

These tools are fundamentally changing the way we learn technology and our production processes. Thanks to AI, digital production is now accessible not only to software developers but to individuals from all walks of life. The rapid transformation of ideas into viable projects reduces the technical barriers to creativity. People are now not only users of technology but also producers who shape it. This new production culture offered by artificial intelligence supports social development as one of the most powerful transformers of the digital age.

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3.4. Safe and Ethical Use of AI Coding Tools

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AI Coding Tools and Usage

3.4. Safe and Ethical Use of AI Coding Tools

Artificial intelligence-powered coding tools increase user productivity while also creating new areas of responsibility. Using these tools safely and ethically is crucial for sustainable digital development at both the individual and societal levels. The convenience offered by technology can only translate into real benefits when used within the right boundaries.

AI systems operate using data provided by users. Therefore, the first step towards safe usage is protecting the privacy of personal information. Passwords, identification numbers, financial information, or sensitive data should not be entered into coding tools. Although most systems offer security measures, how data is processed and stored may not always be under the user's control. Consequently, privacy awareness is a fundamental component of technological literacy.

Ethical use is not limited to data security. Artificial intelligence systems operate based on patterns learned from the data they are trained on; this means they can sometimes produce erroneous, biased, or misleading results. Therefore, users should critically evaluate the outputs they obtain and verify their accuracy using different sources. Care must be taken to ensure that the content or code produced does not infringe on the rights of others, and copyright, citation rules must be observed.

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3.4. Safe and Ethical Use of AI Coding Tools

Another important issue in the ethical use of AI tools is transparency. If content, visuals or code are created with AI support, this must be clearly stated. This preserves trust in the digital environment and prevents misdirection. Hiding AI contributions, particularly in education, news, and public projects, can lead to ethically problematic outcomes.

Safe use also requires awareness of limitations. AI tools are designed to support human creativity; they cannot replace uniquely human processes such as decision-making, value judgement, or emotional assessment. Users should view these tools as guides and always rely on their own knowledge and experience when making final decisions.

At the societal level, an ethical approach includes the principle of inclusivity. Artificial intelligence technologies should be used in a way that is equally accessible to everyone and does not exclude anyone. When utilising these tools in education, employment or social projects, the access opportunities of different socio-economic and cultural groups should be taken into account. Using artificial intelligence safely and ethically is not only an individual responsibility but also a shared consciousness of the digital society. This awareness ensures that technology develops in a reliable, fair and beneficial way for everyone.

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3.5. The Future of AI Coding Tools and Their Contribution to Digital Transformation

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AI Coding Tools and Usage

3.5. The Future of AI Coding Tools and Their Contribution to Digital Transformation

Artificial intelligence-powered coding tools have become one of the most defining elements of digital transformation. These tools not only simplify technical processes but also bring about fundamental changes in production, education, employment, and creativity. In the digital society of the future, coding will no longer be a skill requiring expertise, but a language through which everyone can express their ideas.
This transformation democratises access to knowledge while also expanding the boundaries of participation in technology.

As AI-based tools evolve, the coding process is transforming into a structure based on collaboration between humans and machines. Humans now play a role not only in writing code but also in directing systems and generating meaning. While AI takes on technical tasks, users focus on higher-level areas such as strategy, design, problem solving, and ethical decision-making. This situation leads to the questions ‘why’ and ‘for whom’ replacing the question ‘how’. The future of technology is now measured not only by production speed but also by the value it adds to society.

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3.5. The Future of AI Coding Tools and Their Contribution to Digital Transformation

The development of these tools will also have a lasting impact on education. Coding and algorithmic thinking skills will no longer be exclusive to engineering departments; they will become a fundamental component of digital literacy in different disciplines such as economics, art, sociology, and design. Students will be able to quickly materialise their ideas, perform data analysis, and produce prototypes using artificial intelligence tools. This will make learning processes more interactive, practical, and production-oriented.

The role of artificial intelligence in the business world is becoming increasingly strategic. Companies view these systems not only as a means of reducing costs but also as an infrastructure that accelerates innovation. AI-supported automation is used in every process, from production to marketing, human resources to customer relations. In the future, a business's success will be measured not only by product quality but also by how intelligently and ethically it can integrate technology. Therefore, AI is no longer an ‘auxiliary technology’ but a strategic partner at the heart of decision-making processes.

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3.5. The Future of AI Coding Tools and Their Contribution to Digital Transformation

From a societal perspective, artificial intelligence also represents an important turning point in terms of equal opportunity. Groups with limited access to technology, particularly women and young people, can use these tools to establish their own businesses, develop digital services, and create new sources of income. This not only empowers individuals but also revitalises local economies and reduces the digital divide. Digital production is now transcending geographical boundaries and becoming a universal field of participation.

In the future, artificial intelligence integration will deepen further. Developed systems will evolve into structures that intuitively understand user needs, self-correct errors, and operate simultaneously across different platforms. This evolution will make technology both more powerful and more invisible. Users will be able to produce content using natural language or visual expressions, without having to deal with complex interfaces. This will fundamentally change the nature of digital production.

The future of these coding tools depends not only on technological progress, but also on their ability to preserve human creativity, curiosity and ethical responsibility. The balance between human intelligence and artificial intelligence will determine the direction of the digital age. If these tools are used in a way that increases participation, facilitates access to information, and makes room for different voices, artificial intelligence will become not just a tool, but the foundation for a more equitable and productive future.

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