Follow the arrows to learn how a game is made

Production

Publisher

Producer

Esports producer

Entry level
Marketing executive

Entry level
Assistant producer

Entry level
Community manager

Multiple entry routes

Design

Lead designer

Gameplay designer

Games writer

Entry level
Level designer

Entry level
UX/UI designer

Art, graphic art, computer science routes

Art

Concept artist

Entry level
3D modelling artist

Art, graphic design routes

Art, animation, computer science routes

Technical art

Technical artist

VFX artist

Graphics programmer

Animation

Animation, art, graphic art routes

Entry level
Animator

Technical animator

Programming

Engine programmer

Gameplay programmer

Physics programmer

Artificial intelligence programmer

Entry level
Generalist programmer

Tools engineer

Network programmer

VR/AR programmer

Maths, computer science, games dev routes

Audio

Music composer

Audio programmer

Entry level
Sound designer

Music, physics, computer science routes

Quality assurance

Build engineer

Entry level
QA tester

Multiple entry routes

Games industry career map

Go to ScreenSkills for more details:
www.screenskills.com/careers-in-games

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The games industry

The sale of video games is now higher than both music and video combined, making it the UK's most important and fastest growing entertainment industry.

In 2018, games sales reached a record £3.8bn, an increase of 9.1% on the previous year, representing more than half of the total entertainment retail market. Sales of hardware grew too - by more than 27%. Virtual reality (VR) grew by 23%. In all there was a spend of £5.1bn across hardware, games, events and merchandising.

This means the **UK games industry is flourishing** and needs an ever-increasing number of skilled employees to ensure it can continue to grow and succeed.

UK games industry

The UK's games industry began in the 1970s and has since grown into the largest in Europe. There are more than 2,250 companies developing, publishing, and distributing games. In 2016, the UK games industry spent £1.25bn on game development.

The industry includes video games and interactive experiences across all digital platforms from arcade machines to computers, home and handheld consoles, mobiles and tablets, along with new technologies like virtual reality (VR) and augmented reality (AR).

The growth of mobile applications (apps) like Candy Crush and new technologies like VR and AR have increased the range and popularity of games worldwide. More than 32 million people play video games in the UK (49% of the population), making this the world's fifth largest marketplace.

In 2017, 76% of the UK population owned a smartphone and 47% of these used apps on their phones to play games. **Girls are just as likely to play mobile games as boys** (48%/52%) but are a little less likely to play video games overall (46%/53%).

The UK is also home to some of the world's top esports talent with competitions attracting audiences of more than 8 million a year. In June 2018, esports was the UK's second fastest growing entertainment and media sector. Premier League football teams including Manchester City and West Ham have signed their own professional esports players.

Where is the UK games industry?

In June 2018, there were 21 towns or cities with more than 20 games companies. Of those 46% were in London (614 companies) and 19% in the South East of England (210 companies). There are also high concentrations in Manchester (96 companies), Cambridge (53), Bristol (50), Sheffield (41), Glasgow (37) and Liverpool (37).

UKIE and NESTA have produced an interactive map of the UK games industry (gamesmap.uk) where you can explore the companies involved in developing, publishing and servicing the games industry across the UK.

Who works in games?

Games is now the fourth largest creative employer after TV, film and radio. It's estimated that the UK games industry directly employs more than 33,000 people (2016) across roles in production, development, publishing and retail. Approximately 5,000 people are employed in the mobile games sector alone.

The esports sector created nearly 500 new jobs in 2016 and contributed £18.4m to the UK economy.

In 2015, the games industry had the youngest workforce of all creative media industries with 68% of employees under 35 years (79% for women), compared with 35% of the UK workforce as a whole.

The sector is increasingly diverse with more BAME employees holding senior positions than in almost any other creative sector (13%) and increasing numbers of female and BAME students enrolling onto Higher Education games courses.

In 2015, permanent staff accounted for 84% of jobs, with freelancing lower than in other creative media sectors at just 16%.

Games industry skills and jobs

The skills needed to work in the games industry are broad and varied, with large and small development studios needing different skills to publishers or distributors.

In general, the smaller the studio the broader the set of skills you'll need. Employees often fulfil a range of jobs which might include design, programming, or even production. This can give you the scope to develop a wide range of skills.

In a large company, job roles tend to be more specific, like 3D modelling artist, programmer, or animator. Employers will want you to excel at something that you really need doing well, so don't spread your skills too broadly and continually develop your main areas of expertise.

Roles in business management, publishing and distribution require administration, legal, finance, marketing and sales skills in place of technical and artistic skills. Games companies are rarely conventional corporate workplaces, so they can be a great place to grow your career, no matter what interests or expertise you may have.

What do games employees earn?

The average pay across the games industry is just over £38,000. However, there are wide variations depending on job role and level of seniority. Lead programmers regularly earn above £50,000 and publishers earn an average salary of £46,000. Specialist roles like audio programming command higher salaries whilst entry-level positions like quality assurance (QA) testers are paid an average of £16,000.

Choose a games career that you will love and that is well suited to your skills because you will most likely be working long hours (most people work 30-50 hours per week). Doing something you will enjoy and can stay focused on is crucial. The better you become at whatever you do, the more you will enjoy your work and the greater your earning potential will be.

Getting qualified and choosing the right course

The games industry has a highly qualified workforce with 86% holding a degree. Of these 49% hold a creative-media related degree and 29% hold a post-graduate qualification.

At school or college, subjects that are good to study include computer programming, computer science, physics, maths, animation, visual effects (VFX), project management, music, music technology, art and design, depending on the role you are aiming for.

There are a range of vocational qualifications available. You might want to take a BTEC Level 3 National Diploma in Digital Games Design and Development or an Aim Awards (NextGen Skills Academy) Level 3 Diploma/Extended Diploma in Games, Animation & VFX Skills. The Extended Diploma is equivalent to three A-levels and comes with UCAS points so that you can progress to university or gain access to an apprenticeship.

Games industry apprenticeships are currently under development and may take some time to become popular with employers. Look instead for games companies offering apprenticeships in creative digital media, visual effects or digital technology. You can use the UK Games Map (gamesmap.uk) to find companies you are interested in working for in your area. Check out their websites for apprenticeships or junior roles.

Most people who work in the games industry have degrees, so you might want to be one of them. More than 60 UK universities or colleges provide undergraduate video games courses and there are around 40 master's level courses available. In all there are 5,200 students are studying games, an increase of nearly 19% year on year.

ScreenSkills can help you find a course that will help you get a job in games. It gives a Tick to courses that have proved they equip you for the industry. Go to the website (screenskills.com/tick) to find courses with industry-led training and connections.

Other qualifications in demand by employers in the games industry include **computer programming/computer science, physics, maths, animation, visual effects (VFX), project management, music, music technology, art and design.**

Whichever route you plan to follow, look into the destinations of other students who have taken that route before (sites like LinkedIn and ScreenSkills can help). If recent entrants are employed in the kind of jobs that interest you, then you are most likely on the right track. Don't be afraid to reach out and ask for advice from employees already in the roles that you aspire to.

Develop yourself

Whichever route you choose, taking an active role in your own career progression by developing your skills, experiences and networks will be just as important as gaining qualifications.

Games designers, artists and programmers can start honing their skills from an early age through the use of widely available industry-standard software like the Unity and Unreal game engines, or Maya, 3DS Max and ZBrush 3D modelling tools. These enable you to develop and share your creations through forums, blogs and video sharing sites.

Employers will want to see a portfolio of your work or examples of code that you have written in addition to your formal qualifications. Visit ScreenSkills' portfolio page at **screenskills.com/building-your-portfolio** to get advice from the industry about what to include. You will also find suggestions of free versions of software in everything from coding to 3D modelling and scriptwriting.

Course leaders will also want to see evidence of your interest prior to admitting you onto a degree course or apprenticeship - so don't wait to start building your skills and networks.

Getting started in the industry

Most games jobs have several levels of seniority, so you can start with an entry level role and work your way up. For example, programming roles may include:

- junior programmer (entry level)
- programmer
- senior programmer
- principal programmer (technical)
- lead programmer (scheduling/production)

There are also a wide range of specialisms within each field like character, environment and texturing artists who may specialise further in 2D, 3D or VR; or have a wider skill set that includes design and animation.

Experience is an important step in starting your career. Include any related hobby experience in your cover letter to help you land your first job. Read trade magazines, enter competitions/games jams. Attend events. Join forums. Being part of the games community will help you to find opportunities to gain experience and to develop and showcase your skills.

Be enterprising; you may be able to use your skills as a freelancer, sole trader or start-up. Don't overlook setting up by yourself. Digital 3D artwork, games and interactive experiences are often included in the marketing plans of major corporations and used as tools for education and training, so you may also be able to work your way into the games industry by gaining experience in other sectors.

Careers in
The games industry
Where art and technology collide

Production

Publisher
Gives developers the money upfront to make a game. They strike a deal with a studio (game development company) to make a game according to an agreed brief. The games publisher then works closely with the game producer to make sure the game is being made as agreed, to budget and on time. They also help with marketing and quality assurance (testing).

Producer
Keeps the whole project on track and moving forward. Before production starts, they work with the designer, lead artist and lead programmer to work out what needs to happen to create the game. They agree targets to be met by certain dates (milestones). They work out a schedule (pipeline) for the project and decide the teams and equipment needed. Once development is underway, they make sure none of the teams slip behind schedule.

Esports producer
Puts on the tournaments in which gamers compete against each other at live-streamed events. They make it possible for esports fans to see the thrills, spills, winners and losers at esports competitions. They plan the broadcasts and make them happen. Esports is the second fastest growing part of the UK entertainment industry with jobs increasing year-on-year.

Marketing executive
Creates advertising and marketing campaigns about upcoming games. They use social media, reviews, adverts, online communities, dedicated game websites, sales platforms and face-to-face events. They coordinate the design of promo videos and adverts, press releases, interviews and artwork for cover images, packaging or merchandise.

Assistant producer
Helps with the day-to-day running of projects. They assist with filing and archiving assets such as concept artwork and photographs needed for marketing and press releases. They help with planning and checking that milestones are being met. As the game nears completion, they help organise press visits, game demos and photo shoots.

Community manager
Takes care of the gamers themselves. Games fans play with each other, talk on social media, go to tournaments and wear the tee-shirts. Community managers look after the community that grows around a game. They attend events, write newsletters, organise social media, set up live streams and respond to fan feedback.

Design

Lead designer
Responsible for how a game looks and plays. They lead a team that lays out the characters and props and decides what's going to happen. Once a game is being made, they make sure design briefs are met. They also decide if changes need to be made and often play a role in pitching ideas to publishers.

Gameplay designer
Responsible for game mechanics - how a game plays. This includes actions like how high a character can jump, how long it takes to reach maximum speed, or when you can gain points. They design how systems and mechanics evolve over the course of a game as the player advances through it.

Games writer
Develops the story of a game. Writers are usually given a loose sequence of events and locations which they weave into a coherent story. They give a game its meaning.

Level designer
Creates situations that give players interesting problems to solve in each 'level'. They use the systems and mechanics devised by the gameplay designer. This includes actions, events, objects and environments. It may also include how the characters and non-playable characters (NPCs) behave.

User experience (UX) and user interface (UI) designer
UX designers plan what a game communicates to make sure a game is nice and easy to use (as distinct from being easy to win). They solve technical problems and develop tools that make the work of the art team easier. They ensure the players get clear feedback from the game, so players know what to do. UI designers are responsible for the heads-up-display (HUD) showing score, lives, levels, menus and commands efficiently and clearly to the players.

Art

Concept artist
Responsible for the overall style and look of a game. They use traditional and digital art skills to visualise the initial game ideas in 2D. This helps the art team to understand the look of the game and becomes the basis for the marketing materials.
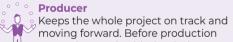
3D modelling artist
Creates 3D objects such as characters, vehicles, furniture and weapons using digital modelling and sculpting software. Modellers translate art from the concept artist into 3D models. Some 3D modelling artists specialise in disciplines like character or environment modelling. In other studios they may be responsible for modelling several types of asset or even whole game levels.

Animation

Animator
Breathes life into creatures and objects created by 3D modelling artists. They create the illusion of movement, adding realism and personality to a creature. Game animation is often a complicated combination of different types of movement, so animators make extensive libraries of reusable movements for each character.

Technical animator
Makes it easier for great animation to happen. They act as a bridge between the programmers and the animation team, working out how the tools and game engine can be developed to overcome the technical challenges that arise.

Technical art

Technical artist
Acts as a bridge between artists and programmers to ensure the artwork works effectively within the game platform. They solve technical problems and develop tools that make the work of the art team easier. They may also undertake complex art or rigging tasks, depending upon the size of the studio.

Visual effects artist (VFX)
Adds action and realism to games by creating things that move, like water, explosions or superpowers. They use digital art software alongside traditional art, maths and physics concepts to create realistic effects, both stunning, like a tornado, and subtle, like moving clouds.

Graphics programmer
Ensures the game maintains its intended look throughout gameplay. They work closely with the art team to ensure the graphics are as detailed as possible without impacting on the speed and playability of the game. This is a technical job using maths, polycounts, rendering and optimisation.

Programming

Engine programmer
Develops the game engine from which the game runs. They create new functionality in the engine and rewrite the existing systems to make them as efficient as possible. They also fix bugs and deal with any technical glitches along the way.

Gameplay programmer
Writes the code that controls the players' interaction with the game. They work with level designers to decide how the gameplay will work, writing the rules that govern what objects do and paying attention to balancing and tuning how the game plays.

Physics programmer
Creates software that forms the basis of crashes, collisions and other things that move. When, for example, a car bursts into flames, the effect needs to be similar to what would happen in real life. Physics programmers write the code, based on the laws of physics, to make this happen. It requires high-level knowledge of physics, programming and gameplay to get the right blend of realism and fun.

Artificial intelligence (AI) programmer
Creates the brains of the game. The non-playable characters (NPCs) need to make decisions and behave in believable and exciting ways that present the player with varying degrees of challenge. AI programmers write the code that determines how these characters operate. This gives the impression that NPCs have thought and makes the game appear intelligent.

Generalist programmer
Finds the most stable and efficient means of coding a game, ensuring scripts are clean and reliable. They use and adapt ready-made code libraries and write custom code as needed. They test the code and fix bugs. Generalist programmers also work with QA testers to identify and repair weaknesses in the system.

Tools engineer
Makes games design, art and programming easier by providing the best tools (software programmes) for the job. Some tools are bought off-the-shelf, but sometimes bespoke software is needed. Tools engineers create and maintain those tools. They work across teams to find the most efficient ways to get data and assets into the game.

Network programmer
Makes it possible for gamers to play with each other. They develop the code behind online multiplayer games so that everything gets transmitted from one machine to another at the same time to make playing games with people on other devices possible. It's one of the most complex areas of game programming, involving an excellent understanding of programming, network protocols and client/server engineering.

VR/AR programmer
Writes the complex code for cutting-edge, immersive, game development. Virtual reality (VR), experienced through a headset, is designed to feel like stepping into another world. Augmented reality (AR), in which digital assets are laid over a real environment, is used in games like Pokémon Go. Both require programmers who enjoy research and development.

Audio

Music composer
Writes the game's theme tune. They add atmosphere with music that signals impending danger, celebrates the end of a stage or indicates that a certain character is approaching. As well as being good musicians, music composers understand gameplay. They know how to 'spot' a game - noting the points at which music will enhance the experience of the player.

Audio programmer
Writes the code that makes a game sound good. They make it possible for effects like gunshots or footsteps to be triggered by the player's actions. They also develop the software which puts the audio files into the game. Audio programmers are specialists often with backgrounds in audio engineering.

Sound designer
Creates the soundtrack for a game, including the music and foley - sound effects like gunshots, footsteps or heavy rain. They make gameplay more exciting by adding mood, tempo and emotional depth. They may start by creating a library of sound effects; working with composers and actors or going out to record sounds. They edit, mix and master to produce the soundtrack for the finished game.

Quality assurance (QA)

QA tester
Doesn't get paid to just play all day. They test specific aspects of a game, write detailed reports of each bug found, and then re-test when the development team has fixed it. They look for programming bugs, spelling mistakes, graphical or audio glitches and even copyright issues. Further training may be needed to progress from QA into design or development roles.

Build engineer
Keeps the development process moving by testing code and ensuring there's always a current, up-to-date version of the game available. This involves automating and optimising processes, maintaining software and hardware systems, creating tests and helpful tools, and communicating across teams.

There are many other jobs across the games industry including data analysts, accountants, localisation managers, translators and administrators.

For more detail on the roles listed go to **screenskills.com/careers-in-games**